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The Environment in Which Statistical Offices Will Work in Ten Years' Time

SIR CLAUS MOSER

Director of the Central Statistical Office and Head of the Government Statistical Service
United Kingdom

This article is based on a paper given at a seminar on Statistical Services in Ten Years' Time held in Washington in March 1977. The seminar was organized by the UN Statistical Commission and the Economic Commission for Europe. The article draws on comments by a number of other national statistical offices (Austria, Canada, Czechoslovakia, Finland, France, German Democratic Republic, Federal Republic of Germany, Greece, Hungary, Italy, Poland, Rumania, Spain, Sweden, Switzerland, United States of America, Yugoslavia), but basically represents a personal view rather than a summary of these contributions.

Introduction

Looking back at how statistical systems here and in other countries have changed over the last 10 years, one finds differences in detail rather than in fundamental purpose or approach. I suspect the same will be true when in due course one looks back from 1987 to 1977. Of course there will be many differences in the type and range of statistics collected and in the technology used for their collection and analysis—but I doubt whether work and life in a statistical office will be fundamentally different from today. Whether it is or not will depend mainly on the general environment, and especially on the government environment, in which the offices operate and it is with this that the present article is concerned.

One other introductory remark needs to be made. In looking 10 years ahead, one can either speculate on what is *likely* to happen or discuss what (in one's own view) is *desirable*. I shall try, as much as possible, to concentrate on the "likely," though some wishful thinking will creep in: it is hard to avoid the temptation of saying how official statisticians should—in one's own view—react to likely challenges. But the main emphasis is on the problems which official statisticians are likely to face in 10 years' time.

The Current Situation

In considering the future environment, two broad facets can be identified. One is the relation of statistical offices to the rest of government and to other public authorities; the other is our relation with nongovernment groups and individuals, both as users and suppliers of data. The former bears on the changing role of Government itself and what, in consequence, may be required from us; the latter bears on relations with the business community and the public and raises problems such as privacy, confidentiality and the burden of form-filling.

Before gazing into the future, it is useful to try to characterize the environment in which we work now—perhaps with a 10–year backward glance in mind. We note the enormous growth in the scale of official statistics in most countries; it is not exceptional for the statistical office to have multiplied in its professional complement by a factor of five over the last 10 years, with the grades of the top people much higher than before and with greater integration in the top councils of government. The percentage of public expenditure spent on statistics has increased substantially, more than many other parts of government. The range of statistics collected directly, or indirectly, from administrative data has increased beyond recognition, accompanied by gains in accuracy and timeliness. The technology of statistics and of automatic data processing (ADP) facilities has improved. Decisionmakers are more conscious of statistics

and in public discussion statistics are more prominent. The general public, both as individuals in various professional groupings and in business, are more sophisticated in their understanding of, and respect for, statistics, and the standard of newspaper comment on, and use of, statistics is greatly improved. In short, compared with 10 years ago, we have more and better statistics, they are better produced, and they are used more intelligently. If this sounds complacent, the last year or two have removed much of the grounds for complacency. Defects in the system have become more apparent, including prominent errors and delays, and there has been some opposition to the increasing demands made by the collectors of statistics. A more critical attitude is evident, not only among policymakers but also in the public, whose increasing participation in policy and management increases their appetite for good data. It is against this background of increasing demand, coupled with a less unquestioning attitude, that one looks 10 years ahead.

The Government Environment

The enormous increase in the demands of governments for more and better statistics has reflected the increase in government itself. Wherever one looks, governments have tended to govern more, and it is a basic question whether this trend is likely to continue. There are two contradictory streams of demand. People and organizations call for more intervention and services from government, but they also express growing concern about the extent of government intervention in their lives; many take the view that governments should govern less. It is anyone's guess to what extent the cries for less government and less interference will carry the day against the opposite view. The chances are that the pressure for less *central* government will have some success though perhaps not enough to affect the central government appetite for official statistics; but there is no doubt it will make the climate in which we work tougher, with more public resistance to requests for data, and thus threats to reliability. At the same time, the activities and importance of regional and local government is likely to increase, and with it the demand for small area statistics.

But even if one assumes that the central government environment 10 years hence will be such as to require at least as much statistical support as today, this is not to imply an unchanged official environment for statisticians. Far from it: I believe that the continued government demand for statistics will be set in a very changed context.

First, *resources* will not grow in parallel with demands. Throughout the world, public expenditure will come under increasing scrutiny and the size and growth of civil services in particular will be kept more in check, including the statistical activities. Yet the demands are certain to increase, not least because governments themselves will need more and better data for setting their own priorities. An increasing conflict between demands and resources is likely, and this will mean:

(1) a greater emphasis on *efficiency* in statistical organization and production and on cost reduction generally, and a greater reliance on cheaper (e.g. administrative) sources;

(2) a much greater need for rational setting of statistical *priorities*, with strictly structured medium-term statistical programs becoming the norm—related to policy needs, and with the more sophisticated use of cost-benefit techniques applied to statistics. This is a difficult area and many statistical activities are not easy to quantify in terms of benefits; but systematic costing, and the estimation of benefits wherever possible, must be the aim. In times of relatively static resources, priorities are vital—and they must encompass all parts of a statistical system.

Second, the *nature of government demands* for statistics is likely to change. This is meant in several senses:

(1) governments attempt to steer economies—and, up to a point, social developments—with the aid of statistics. The statistical boom years have led to greater sophistication among policy users and to great expectations. These are often unfulfilled. The indicators can be less accurate, less timely and less relevant than the policymakers expect, and the fact that the expectations are often unrealistic may be as much the fault of the producers as of the users of statistics. Expectations and achievements must be brought closer together, with a much greater emphasis on the *quality* of the data—in terms of accuracy and timeliness;

(2) government users of statistics will look for greater simplicity. The flood of statistics resulting from the boom years sometimes confuses or fails to help. The search will increasingly be for simple summaries, for key indicators, for simple rather than complex models;

(3) policymakers will increasingly want to supplement general background statistical information with data bearing on specific problems—to help them in making particular decisions and in monitoring their consequences. Microstatistics—relating to particular areas, sectors and groups—will become more important, and overall national statistics perhaps less so;

(4) above all, policymakers in government will expect from their statistical offices not so much the production of more data as, increasingly, their analysis and interpretation. The aim will be "to collect less and use more"—and understandably so. Analytical studies, rather than mere presentations, will be expected of the statistical offices of the 1980's, with—among other things—advances in the statistical base for economic and social forecasts. Statisticians will be expected to come more into the open in assessing their meaning. Figures will be expected to have "quality labels" attached to them. The greater interpretative role will demand a more outward-going, politically sensitive approach (which, one must stress, should—and can—go hand in hand with total professional integrity).

In sum, the government environment 10 years hence will be tougher as regards resources and more critical about what official statisticians produce. The magic of numbers may be less seductive than now. Ministers and top administrators will be sophisticated enough about statistics to want guidance about the accuracy of the figures, as well as greater timeliness and relevance in the figures themselves; they will want more help in analysis and interpretation. Priorities and statistical programs will have to be explicit, with *user*-orientation (for users outside and inside government) dominating their choice. Regular routine statistics may become less important, "one-off" surveys and analysis more so.

Trends in subject matter are hard to predict. It is a safe bet that social statistics will become even more important, as a necessary component of increasingly systematic social monitoring. The interrelations between different social changes will call for measurement as social policymaking becomes more sophisticated. The social consequences—often secondary or tertiary—of economic changes will need to be analyzed, and statistical offices may be led into areas of measurement which are at present regarded as difficult, even impossible. Statistics on distributions and differentials will become ever more important. Generally, as societies and social policies become less compartmentalized and more integrated, so must their statistical analysis.

The Regional and Local Environment

The previous section has argued that the central government environment may not change dramatically in the next 10 years, though the demands on the statistical services will. At "subnational" levels the changes are likely to be more basic. A continued movement towards devoted and dispersed government seems likely in many countries. The trend is towards dissatisfaction with large units and a "small is beautiful" atmosphere will add to other pressures for a greater spread of decisionmaking and administration.

This devolution of power and administrative functions from the center to regional, State, provincial and local authorities will substantially change the context in which statistical offices work. It will call for improved small area data, and there will be a need for coordination to ensure that what is collected and produced "locally" is compatible with national requirements. There will be organizational problems in how to link the statistical operations of local offices with their central counterparts. To the extent that the former have administrative automony, it will be the harder to sustain an integrated statistical system and organization. This integration is so important from the point of view of good statistics that organizational splintering will need to be resisted, or, if it is unavoidable, accompanied by strong coordinating machinery. In short the changing "local" environment, while good from the point of view of encouraging small area data, contains within it organizational difficul-

ties. To the extent that decision and policy making becomes increasingly decentralized, so will the statistical services have to be; and this could be a major change in environment.

What is certain is that subnational authorities, whether at State, regional or local level, will increasingly have their own statistics, research and intelligence units, and also their own ADP installations. Networks of local computer/data banks would offer advantages in supplying comparable data, but this will raise questions of what is socially acceptable as well as what is technically feasible.

The Public Environment

Dissemination.—Like other parts of government, national statistical offices impinge on public life, and their relation with the public is a two-way process. On the one hand, the public are users of government statistics, and on the other as respondents they provide the straw with which the statistical bricks are made. In both senses, the environment 10 years hence may be very different, from now.

National statistical offices will increasingly be called upon to make the data on which policies are based more readily available to the public at large. Greater openness will be expected all round, partly because there will be greater public participation in decisionmaking and partly because impatience with secrecy is likely to grow. More specifically, statisticians will be expected to make available data collected at the public's expense and through their effort.

The public of the 1980's will be better educated and they will consistently challenge the decisions of government. They will expect to monitor government efficiency by using official statistics and will expect readily accessible, convenient and well-illustrated statistical publications, with more guidance than now on quality of data and their meaning. Nongovernment users will become more important in the thinking of statistical offices, with close attention to public relations, the "marketing" of data, and guidance to data sources.

For the supply of detailed data, traditional methods of dissemination will not suffice and new technology will help. Computer terminal linkage to data banks holding anonymous aggregate data will become widespread and the use of visual display units and easy-to-use analytical packages will further facilitate communication with the non-expert user. Detailed guides to the data available in this way will be needed. Such developments are totally feasible, but they will involve serious technical problems of safeguarding the confidentiality of individual information. In any case, the chances are that dissemination of statistics will be a mixture ranging from conventional publications to data bank outputs, rather than just the latter as might once have been expected.

Institutions other than government will increasingly analyze and present statistics—e.g. trade unions, trade associations, stockbrokers, research institutes. In this way, national statistical offices may lose the near monopoly they enjoy now, and there will be risks of duplication and confusion. The more open we become with official statistics, and the better they are, the less the risks will be. But some increase in statistical activity outside government is inevitable; it will give the concept "official statistics" a new meaning, and will call for strong coordination by the central office if confusion is to be avoided.

Form-filling.—Whether objection to the burden of statistical inquiries placed on businesses and individuals will harden is anyone's guess. There could be increased resistance stemming from concern about "over-government" and objections to authority in general. People could become more concerned about privacy, and business firms—especially small ones—could become more impatient about government-imposed paperwork. Against this, increased openness and persuasion of the value of good statistics could influence attitudes in a more positive direction.

It seems sensible to proceed on the assumption that attitudes may harden. National statistical offices will have to ensure that society does not become, or consider itself to be, oversurveyed. Thorough scrutiny procedures will check that all government surveys are strictly necessary and that each item of data sought is essential. There will also be calls for national statistical offices to control the proliferation of nongovernment surveys, though this may prove difficult to implement. Informing the public about the statistical requirements for efficient government and explaining the reasons for, and uses of, the surveys is important. Respondents

will expect to "get something direct" out of surveys—a return for their labors. In the field of business surveys, closer links between statisticians and company accountants will help. The methods of data collection will change in the direction of more emphasis on reducing the burden on the public by, for example,

1. increasing use of sample surveys (and their careful design to minimise sample sizes);
2. improving form design;
3. deriving data directly from business and other organizational computers;
4. using administrative records as sources of primary data more systematically and generally.

The use of compulsory surveys may decline, and therefore there will be greater emphasis on techniques of imputation to deal with the problems of nonresponse. However 100 per cent surveys will still be necessary to provide data for grossing-up procedures and for the sampling frames themselves. Regular population censuses (asking for only a limited amount of information) will fulfill part of this need and registers, e.g. of businesses and properties, will be developed for use with other types of surveys.

Privacy and confidentiality.—The subject of privacy is intertwined with that of confidentiality and the public will continue to have fears relating to both. However, subject to fears on confidentiality being allayed by well-publicized safeguards, and constraints being placed on the total burden of statistical inquiries, it is possible that public attitudes to privacy could become more relaxed over the next 10 years, and that the limits to what one can ask, successfully, will be widened. This is hard to gauge, and it is just as possible that citizens will increasingly challenge the right of government to ask personal questions, and will expect stronger justification for them. Which trend prevails will depend on attitudes to government at the time and on complex economic and social forces. Most likely, there will not be a consistent trend, and attitudes will vary from country to country and from time to time.

The statistical offices will certainly have a major task in allaying the public's fears on confidentiality at a time when there will be more pressure for linking of data and the creation of data banks, and when all the technical computer trends may suggest a less safe environment. Statistical laws to cover these problems will beome commonplace and, where there is no actual legislation, there will probably be codes of conduct, with "watchdog" bodies set up to survey their implementation. The security of personal data and the protection of business data for individual firms will be the most important aspects. Confidence on these and related points will be vital if statistical offices are to retain the support of the public.

The Technical Environment [1]

The previous section touched on aspects of technology, and most countries in their contributions discussed developments they expected in the ADP areas. Dramatic changes in computer technology can be anticipated with improvements in hardware and the likely predominance of minicomputers. New input and output technologies are likely, with much reference to optical character reading, microfilms, microfiche etc. Processing should become faster and more efficient. Linkage facilities are expected to get much easier, facilitating the development of integrated information systems, including linkages with computers of large companies, facilitating the supply of data to and from them. Administrative records are expected to be increasingly computerized with statistical outputs as an essential by-product. Access to anonymous computer-held information is expected to become easier, with facilities for "browsing" and interrogating the data banks, so that analysis of basic data can be done more easily.

The potentialities are great and one can understand why statistical offices use phrases like "computer revolution" when looking 10 years ahead. But there is, at the same time, a danger that statisticians will be mesmerized by ADP developments, and will be led into the construction of increasingly complex data systems when what they may be wanted is simplicity and better use of the data already held. These dangers can be partly avoided if establishments have more control over ADP developments, in short, if the *user*

[1] This was the subject of a separate session at the seminar and is touched on only briefly here.

voice (in this case that of statisticians) is given more weight. I have already mentioned the questions of privacy and confidentiality, and these too must be given greater weight in deciding how to develop the computer side of statistical offices.

The moral seems to be to proceed with the technical developments that now lie within our grasp, but not to be carried away by them into areas where they might harm rather than help the service statisticians give to governments and to the public. The main need will be for statisticians to make better, more sensitive and more relevant use of data, and to the extent that computers help with this, they are to the good; to the extent that they distract from this aim, they should be treated with caution.

The Professional and Academic Environment

The professional environment for statisticians working in government may well change. True, the main responsibility for collecting and producing statistics will remain theirs, but if they do not rise to the challenge of a greater analytical and interpretative contribution, this role may well be taken over increasingly by other social scientists. This would reduce statisticians to mere data-providers which would be a great pity. Professional statisticians have a great contribution to make in interpreting their data and they should not shy away from it. Interaction with administrators will become better as they become more numerate, and statisticians more literate. Interdisciplinary teams are likely to become more commonplace.

Already the borderlines between different kinds of specialists are becoming more blurred. Economists and statisticians already overlap in their functions, and are also likely to do so increasingly. Overlaps and relationships between statisticians and accountants, ADP specialists, operational research specialists and other groups are also likely to grow, and the breed called "statisticians' may become less distinct and identifiable. This is not harmful as long as the central core of the statistician's work remains clear and represents a distinct professional contribution. At the edges, the more he comes to interact with other specialists and with "generalists", the better.

A very unsatisfactory aspect of the present situation is the gap between official statisticians and the academic statistical community. This was the main thesis in Mr. Petter Jacob Bjerve's presidential address to the Warsaw session of the International Statistical Institute in 1975 and was also discussed by me in a paper to the American Statistical Association in 1975; it need not therefore be labored here. What is apparent is that in most countries official statisticians are relatively remote from what goes on in university statistical departments. Too often they make little use of advanced statistical techniques, are not in close contact with teaching and research, and do not generally contribute to university activities; all this is in a situation where official statistical work could no doubt benefit from the help of the academic community (as quickly becomes clear when academic consultants *are* used). On the whole, university statisticians, at any rate in mathematical and theoretical statistical departments, take fairly little interest in official statistics, though the course work and research in academic departments could benefit if more of it was built around problems arising in official statistics. It is to be hoped that 10 years hence the bridge will have been narrowed. The difference between theory and practice seems to grow each year, with increasing splintering of the profession. Both sides—the theoreticians and the practitioners—lose from the gap. In particular it is to be hoped that courses in statistics will encompass a more practical outlook, with applications in official statistics having as much prominence as those in businesses, agriculture, research and so forth. This is all the more vital if, as is argued here, statisticians in government are to play a more analytical role; they should emerge from their university courses with a well-balanced background. In return, we must serve the academic fraternity better—in particular by greater openness and access.

International Environment

A brief word needs to be said about the way the international environment for work of statistical offices will change. This will vary with the organizations. In cases their influence will be felt mainly in the search for more comparable statistical concepts and in the development of accepted international standards and classifications. These objectives are likely to be intensified by the greater use of ADP, and there will

be increased pressure for the use of common coding systems in areas of mutual interest, for example documentation concerned with international trade. Just because international factors increasingly affect national environments, the pressures from international organizations for better and more coordinated data will intensify.

International organizations may increasingly sponsor the collection of new data for the purpose of intercountry comparisons. This is particularly likely where the organization has a formal, and partly binding, relationship with its members. Such organisations may well become tougher in their demands, and this will cause increasing priority choices for national offices in times of scarce resources.

The study of international problems as such—e.g. relations between economies, markets, population movements and so forth—may grow as countries become more intertwined, and this would intensify the demand for international and internationally comparable statistics.

Concluding Remarks

I have looked at various ways in which the environment for official statistics may alter in the coming decade, in realistic terms, avoiding fanciful speculation. Trends likely to affect many countries, rather than a few exceptional ones, have been emphasized.

What emerges is a challenging situation. Demands are likely to increase more than the resources needed for satisfying them. There will thus have to be stricter priority-setting and emphasis on efficiency. While one can assume a continuing, perhaps a growing, respect for the role of statisticians, users of statistics will be more critical. The statistical honeymoon of the immediate post-war decades is over. A more critical scrutiny, from within government as well as from outside, will be applied to official data, and we will be expected to be more forthcoming about the quality of our figures and more helpful in analyzing and interpreting them. At the same time, the increasing dispersal of decision-making will call for major improvements in small area data. The public generally will become more demanding, and at the same time *perhaps* more resistant to data collection and worried about privacy and confidentiality. The more open statisticians are, the more effective in explaining why they want data and how they plan to use them, and the better they become in disseminating statistics, the more cooperation will they get from the public. Statistical offices will need to become more outward-looking and very user-oriented.

A more fundamental organizational problem may arise from some of the developments I have discussed. Several of the trends foreseen for the next decade imply a "splintering" in statistical activities, away from an integrated approach; moves to more *ad hoc* surveys, as opposed to regular statistics, can have this effect as can a greater stress on analysis and interpretation; the building up of regional and local statistics can obviously have this effect; so can the development of statistical activities outside government. All these tendencies could weaken the build-up of integrated systems which has, rightly, characterized the last decade or two; and could result in a profusion of autonomous organizations. This could undo progress made in recent years in creating integrated and coordinated statistical operations. One possible outcome could be for statisticians to become confined to "data factories", with analysis and presentation and use looked after elsewhere by people with other labels. This would be highly undesirable in terms of the integrity and proper interpretation of the data and must be avoided. The aim of achieving both relevance to policy *and* integrity, will remain one major issue to wrestle with, and the establishment of strong coordination arrangements to counter the effects of "splintering" in statistical activities will be another.

A Framework for Planning U.S. Federal Statistics, 1978–1989

(Draft Chapters)

AGRICULTURAL STATISTICS

Introduction

Agriculture has a long history of importance in statistical programs. From early data collection programs started in the 1840's by the Census Bureau and the Commissioner of Patents, statistics for agriculture evolved to meet the informational needs of the industry as it went through expansion and commercialization. Most of the early data system was developed to aid commerce because the majority of people were on farms. The common theme was that individuals, given sufficient information, would make rational production decisions leading to economic stability. The main purpose of statistics on agriculture in the 19th century was to secure a fair price for the farmer and, hence, a fair cost to the consumer.

Expansion of agricultural statistics into new areas such as prices, the parity price formula, labor supplies, farm credit, and price spreads occurred in the early part of the 1900's. World War I, the Great Depression, and continued change in the agricultural industry brought new demands for agricultural statistics. The growing industrialization of the Nation along with swings in the economy brought on a larger governmental role in the life of the Nation. The need for more information on the agricultural economy by government policymakers developed into another important role for agricultural statistics. Sector accounts on income, expenditures, debts and assets were developed, forecasting and analytical efforts were increased, and current conditions in agriculture were analyzed on a regular basis.

The agenda for agricultural policymakers has continued to expand since the 1930's. The development and general economic conditions of rural communities became an important topic as the number of people making a living from farming declined. The performance of the entire food and fiber sector, from input suppliers through production, processing, wholesaling and retailing, has become a more important policy concern. Interests of consumer in adequate supplies of food at reasonable or fair prices and the economic conditions in rural areas have merged into concerns about the economic structure and control of the farm sector. Finally, the significantly increased importance of international markets for food and fiber and problems with the environment have created important new policy concerns for agriculture.

These broader areas of public policies affecting agriculture have created new demands for data and information. One of the major problems with the existing system of agricultural and rural statistics is that it has not kept pace with the data needs of these broader policy issues. A second major problem is that the data system has not been updated to reflect the changing economic structure of the agricultural industry.

Major User Groups

Users of statistics on agriculture can be classified into four broad catagories: production, processing and handling, consumers and policy and research institutions. Those involved in production or supplying inputs for production are farmers and their commodity organizations, production scientists, financial institutions and companies supplying fertilizer, pesticides and other inputs.

Processors and handlers are traditionally assigned that segment of the marketing chain

EDITOR'S NOTE

In previous issues of *Statistical Reporter* there have been several discussions of the planning process associated with preparing *A Framework for Planning U.S. Federal Statistics, 1978–1989*. The text of the Framework is in the process of being prepared and reviewed by the Federal statistical agencies. A revised draft has been the subject of public review and comment during 1977. Since this material is presented here in preliminary form, it should not be viewed as representing decisions concerning policy matters.

Selected drafts of various sections of the Framework have appeared in *Statistical Reporter*. While preliminary in nature, these drafts have been published in order to facilitate wide review of the materials. Published in this issue are the chapters on Agricultural Statistics, National Economic Accounts, and Science and Technology Statistics. The following chapters have appeared in previous issues: Price Statistics (revised) and Transportation Statistics (September 1977); Income Maintenance and Welfare Statistics (August 1977); Organization and Operations of U.S. Federal Statistical Agencies, Housing and Community Development Statistics, Longitudinal Surveys, and Economic and Social Statistics in the Coming Decade (July 1977); Health Statistics, Population Statistics, and Standards for Statistical Methodology (June 1977); Energy Statistics, Education Statistics, Income, Wealth, and Consumption; and Social Indicators and Social Accounts (May 1977); Labor Statistics, Production and Distribution Statistics, Statistics on the Environment and on Occupational Health and Safety, Civil Rights Data, Professional Staffing and Professional Staff Training, and Interagency Funding (April 1977); Price Statistics (March 1977); Criminal Justice Statistics (February 1977); Confidentiality of Statistical and Research Data (January 1977); User Access—Data Banks (December 1976); Federal-State Cooperative Systems of Data Collection (November 1976); Long-Term Economic Growth Models (October 1976). For a full outline of the overall Framework, see pages 207-209 of *Statistical Reporter* for May 1976.

For background statements on the planning process, see Joseph W. Duncan, "Developing Better Long-Range Plans for Federal Statistics," *Statistical Reporter*, October 1974; Robert W. Raynsford, "The Interagency Statistical Planning Effort, 1975," *Statistical Reporter*, September, 1975; and Paul O'Neil, "OMB's Role in Planning and Coordination of Federal Statistics," *Statistical Reporter*, May 1976.

Comments on these materials should be sent to Office of Federal Statistical Policy and Standards, U.S. Department of Commerce, Washington, D.C. 20230.

from receipt of raw farm products to consumer. This includes such functions as transportation, storage, processing, packaging, and marketing.

Consumers include both the organized and unorganized who wish to stretch the budget or improve the nutritional quality of the diet. Users in this category range from individual households to large foreign corporations in the U.S. market who buy agricultural products.

The most obvious institutions interested in agricultural statistics are governments and universities, both of which are interested in the policies and programs that affect the structure and performance of the food and fiber industries and the economic and social welfare of rural people. There is a vast array of natural resource, food, environmental, energy, economic and social policies and programs that regulate, support or impact in other ways on the agricultural industry and rural people.

Responsible Agencies and Basic Core Programs

The organizations primarily responsible for the collection, analysis, and dissemination of agricultural statistics are (1) the U.S. Department of Agriculture, (2) the U.S. Department of Commerce, and (3) State departments of agriculture.

U.S. DEPARTMENT OF AGRICULTURE

Statistical Reporting Service.—The Statistical Reporting Service (SRS) is the USDA's principal agency for collecting and publishing data on domestic agriculture. SRS prepares estimates pertaining to the current year's crops, livestock, poultry, dairy, prices, and other aspects of the agricultural economy. Most of these data are collected through numerous short surveys rather than comprehensive surveys of entire farm operations. Statistics are regularly provided at the national and State level and occasionally for countries. Reports are issued containing weekly, monthly, quarterly and annual data for a wide array of commodities or other data items. This continuous flow of data on domestic agriculture is produced in a very timely manner for continuous and up-to-date appraisal of the domestic agriculture economy.

Current crop reports provide estimates of acreages farmers intend to plant in the coming

season, the acres planted and harvested, production, disposition of the crop, and remaining stocks. Forecasts of yield and production are issued monthly during the growing season based on information voluntarily supplied by farmers and from counts, measurements, and observations made in sample fields by SRS enumerators.

Livestock and poultry reports include estimates of inventory numbers at regular intervals during the year. Reports also cover breeding intentions, births, hatchings, number on feed, wool and mohair production, numbers slaughtered, meat and egg production, and disposition and value.

Dairy reports indicate numbers of milk cows, monthly and annual milk production, and use of milk. Production of major manufactured dairy products is reported weekly, monthly, and annually.

Reports published by SRS show prices received by farmers for nearly 200 products and prices paid for about 500 items needed for production, indexes of prices received and paid, parity prices, and season average prices of crops, livestock, and livestock products.

Other reports by SRS deal with farm labor and wages, fertilizer, seeds, bees and honey, mink, naval stores, cold storage holdings, and other miscellaneous agricultural elements.

In addition, SRS has been conducting a research program in the use of satellite observation techniques to provide information on the extent and type of U.S. crops. The objective of this program is to use LANDSAT (previously named ERTS) to improve the efficiency of crop acreage estimates for small areas and to improve the land use stratification for area sampling frames. This program, while potentially valuable, is still in the experimental phase and is not intended, in its application, as a substitute for direct surveys.

Economic Research Service.—The Economic Research Service (ERS), the major analytical arm of USDA for economic and social science, carries out an extensive program of current statistics, analysis, and forecasting on: consumption and utilization of agricultural products, farm income, price spreads and marketing costs, farm population, land tenure and use, farming practices, production inputs, farm real estate values and transfers, farm debt and assets, and international trade. Other important areas of work are in water resource planning, environmental impacts, and development of communities and services in rural areas.

Reports prepared by ERS are compiled largely from data collected by other agencies such as SRS, Foreign Agricultural Service, Bureau of Labor Statistics, Department of the Interior and many areas of the Census Bureau. The broad coverage of subject matter by ERS makes data from almost all other Federal departments useful to their mission. ERS statistical estimates are important to other agencies within and without the Department of Agriculture as well. One of the major examples of the latter is the use of ERS estimates of farm income by the Bureau of Economic Analysis, Department of Commerce in estimating components of U.S. gross national product and income.

Agricultural Research Service.—The Agricultural Research Service issues periodic reports on household food consumption and about once every 10 years sponsors a national survey of nutrition and food consumption. The food consumption survey, for which data is currently being collected, is of particular importance to the estimates made by the Department of Health, Education, and Welfare and the Department of Labor of the number of families in poverty and of the cost of various levels of the standard family budget.

Foreign Agricultural Service.—The Foreign Agricultural Service (FAS) is responsible for maintaining a worldwide agricultural intelligence and reporting system to assist U.S. agricultural industry in its foreign trade. This is done through a continuous program of reporting by agricultural attaches and officers located in 64 posts throughout the world covering some 114 countries. Reports deal with estimates of commodity supplies and use, foreign government policies, analysis of supply and demand conditions, commercial trade relationships and market opportunities.

The Foreign Agricultural Service analyzes agricultural information essential to the assessment of foreign supply and demand conditions in order to provide estimates of the current situation and to forecast the export potential for

specific U.S. agricultural commodities. FAS is also responsible for determining the utility and cost effectiveness of using satellite, meteorological and climatological data to predict global production of major crops.

Despite the important information functions performed by FAS their major mission is not to provide statistics. FAS is a program agency responsible for facilitating U.S. agricultural trade.

Agricultural Marketing Service.—The Agricultural Marketing Service (AMS) is another program agency of USDA that is partially involved in providing statistics. AMS operates an extensive system to collect spot market price quotations at numerous markets on a daily basis. Livestock, fruit, vegetable, grain and other commodity markets are monitored, and information is published by AMS through the various news media. The purpose of this information is to assist farmers and others in making day-to-day marketing decisions.

Forest Service.—The Forest Service maintains statistical information on area and condition of forest land, volume, and quality of standing timber, rates of timber growth and mortality, volume of timber cuts, present consumption and probable future trends in requirements for forest products, costs and returns of timber growing, price and market information for forest products, and administrative statistics covering the national forests and State cooperative programs.

Administrative statistics.—Data collected by agencies in monitoring their programs prove to be useful to ERS and SRS. The Agricultural Stabilization and Conservation Service data on tobacco marketing, for example, is used as a check on SRS statistics. Land use and conservation needs data from the Soil Conservation Service are improtant to ERS. Other examples are livestock slaughter data from the Packers and Stockyards Administration and railroad car loading and movement data from the Department of Transportation and private industry sources.

U.S. DEPARTMENT OF COMMERCE

Bureau of the Census.—The Bureau of the Census conducts the census of agriculture as a complete count once every 5 years. Historically, the census was conducted by interviewers. Beginning with the 1969 census, data collection has been done by mail. County, State, and national level data on acreage and production for most crops grown, livestock numbers by species, sales of commodities produced, expenditures, land use, irrigation and drainage, use of purchased inputs, and economic characteristics of the farm operation are collected and published, using USDA data collected from a land area sampling frame to estimate degree of incompleteness.

The census of agriculture provides the only comprehensive detailed set of data on agriculture at the county level. The importance of these county data to data users was recently reaffirmed in a study of the needs and uses of census data. The comprehensive census survey of the whole farm operation also allows numerous important cross-tabulations by size of business, type of farm, land tenure classes, characteristics of the operator, and form of business organization. Thus, the census is valuable as an historical series, to describe the changes in the structure of agriculture over time. While it is useful for long-range evaluation, its frequency and publication schedule mean that the census of agriculture must often be used in combination with other data sources for current policy analysis, particularly that related to the production of agricultural commodities.

As the result of a recent law, the taking of the next two censuses of agriculture will be accelerated (4 years after the previous census) so that, by 1982, the census will pertain to the same reference data as the other economic censuses (e.g., manufacturing, mining, transportation, wholesale and retail trade, and services).

Data produced by other divisions of the Census Bureau are also very important in agricultural statistics. Monthly data on imports and exports of agricultural products and economic data on farm input, food processing and food wholesaling and retailing industries are examples. The census of population and housing and the census of governments also provide important information for statistics and analysis related to rural area development. Data collected by the Census Bureau for other agencies such as the annual housing survey for the Department of Housing and Urban Development and the hired farm work force for ERS are also important in the analysis of conditions in rural areas.

STATE DEPARTMENTS OF AGRICULTURE

The USDA statistical system was not designed to accommodate the level of detail or coverage of specific commodities needed by all State governments. Developing most county level data is considered to be the responsibility of each State, if data from the quinquennial census of agriculture are not current enough to be sufficient.

Current statistical information to accommodate particular needs of the States is provided through a joint effort by SRS and individual State departments of agriculture or comparable organizations. Available State and Federal funds are combined under a cooperative agreement which yields current statistical information for use by both State and Federal Governments.

The agricultural data needs and interests within the respective States vary in subject matter and scope because of the relative importance of particular commodities. Financial inputs by the States are also highly variable but correlated to a considerable extent with the relative importance of agriculture in a State's economy.

Important Problems and Improvements

Data on agriculture and rural areas covers a broad variety of subject matter as was discussed earlier in this chapter. Many of the data needs and problems will not be discussed here in detail because they are included in several other chapters of the Framework. What is important to remember is that statistics on population, housing, income, health, education, employment, etc. must be collected with sufficient frequency and sample size to provide information on rural people as a subset of the entire population. At the same time, statistical programs on energy, environment, finance, natural resources, labor, manufacturing industries, wholesale industries, and retail industries need to provide information about the establishments and production practices in the food and fiber sector.

Institutions and agencies that produce and use agriculture and rural statistics have increased their level of self-examination in recent years. The American Agricultural Economics Associations, through the formation and operation of an Economic Statistics Committee, has played a lead role in encouraging the renewal and updating of agriculture and rural data systems.

This committee, aided by the cooperation of ERS and SRS in USDA has had several task groups examine and recommend changes in specific parts of the agricultural data system. Reports on the farm income accounts and the price spread, market basket and market bill work have been published. Recent reports on agricultural prices, farm labor, nonfarm labor in rural areas, measurement of economic well-being of people engaged in farming, and measurement of capacity of the farm industry will be published soon.

Two other recent reports provide additional evaluation of agricultural statistics. One is the August, 1976 report *Food Information Systems* produced by the Office of Technology Assessment, U.S. Congress. The other is the report by the Advisory Committee on Gross National Product Data Improvement which includes a chapter on the farm income accounts.

CONCEPTS AND MEASURES

The major criticism of agricultural statistics is conceptual obsolescence. Parts of the current data system do not measure the right things and do not provide information or indicators for some of the important economic and social policy questions.

One of the main reasons for conceptual obsolescence is the broader set of policy issues surrounding agriculture discussed earlier in this chapter. Lack of statistics or lack of integration of existing statistics on natural resources, environment, foreign markets, food processing and distribution industries and rural communities and people have caused the agricultural data system to be inadequate on these policy issues.

A second major reason for conceptual obsolescence is the significant change that has taken place in the economic structure of the farm sector. Most of this obsolescence occurs in statistics that are designed as industry level indicators of performance or of economic well-being. Out-dated concepts are also reinforced in major cross-classifications of data for the sector.

The major sector level or aggregate agricultural statistics imply who controls, who gains, and who loses as economic activity, prices, and governmental programs change for the farm sector. As the economic structure has changed, these implications are at best incomplete and at worst misleading.

There are several basic structural concepts embedded in the statistics for the farm sector. Scome of these concepts are explained or supported by the statistics. Others are uncorrected misconceptions because the statistics do not properly describe the existing structure of the sector. The inadequate structural concepts existing in the present data system are:

1. The farming operation consists of both a household and a business establishment which are inseparable as an economic decision unit.

2. Each farm business establishment has one and only one household related to it.

3. The farmer, defined in the traditional sense of the person on the land, or the landowner receives all the income from the economic activity of farming.

4. The farmer is the decisionmaker for what will be produced, by what production practices, and when and where the production will be marketed.

5. The farm population consists only of households that operate farms and thus derive most of their income from the economic activity of farming.

6. Farming is the only economic activity that takes place on farms.

7. Farm establishments are independent, single establishment businesses.

While all of these concepts are correct for a significant portion of farm establishments they are not true for virtually all establishments in the sector, which was essentially the case when the existing data systems were established. Increasing portions of total production take place under new production arrangements including multihousehold units organized as partnerships or corporations. Contract production and marketing where many of the decisions and much of the income are made by the contractor rather than the farmer are also important production arrangements. Multi-establishment operations, where the farm establishment may be part of a vertically integrated business, and large publically held corporations organized to engage primarily in some aspect of farming, are other new economic forms in agriculture.

Farm income accounts.—This is one of the important sector level measures in agricultural statistics. These estimates by ERS provide the basis for the farm sector accounts in the gross national product work. Accounts are constructed for sales of all products as they leave the farm, inventories of major products, and expenses incurred in operating farm businesses.

There are several conceptual problems in these accounts as they are now constructed and published. Several of these contribute to the structural concept problems listed above. All the income from farming as an economic activity is attributed to the traditional concept of a farm operation as the person on the land or to the landowner. In fact some income accrues to production contractors and to firms whose primary business is not farming. This concept provides an incorrect picture of who gains and loses as price and income levels change in farming.

Time series are constructed for historical comparison on income per farm operator family, per farm and capita for the farm population. Income per farm operator family assumes one operator and household per farm and implies that these households are the only decisionmakers and income earners for all farms. Income per farm calculated for the widely heterogenous sector has become a meaningless average figure. Production is becoming more concentrated on the largest farming operations while large numbers of small farms stay in operation because much of the family income comes from nonfarm sources. Thus, income per farm is not a clear indicator for the economic well being of establishments producing most of the farm products nor about the income picture for all farm operator families.

Income per capita for the farm population is not a useful figure because the subgroup defined as farm population is no longer a useful classification for policy purposes. This resident concept figure does not present a meaningful picture of income because many operators do not live on farms while a large number of people without farming operations live on places defined as farms. Nor does the figure provide useful information on the incomes of rural families because only about 20% of the rural population lives on farms.

Other conceptual problems exist in the accounting procedures. Farm income accounts are a mixture of current and capital accounts and do not provide an accurate measure of gross

output because of the way interfarm sales are handled. Problems exist in inventory accounts because farmer-owned inventories stored off the farm are not fully accounted for. Significant measurement problems exist in estimating quarterly income for the sector as required for national income accounting. The major reason for this problem is lack of quarterly data on expenditures.

RECOMMENDATIONS: The farm income accounts need to be reoriented so there is a clean separation of the business and household sector. Information needs to be provided that clearly says something separately about relevant subgroups of establishments and households rather than the mixture of concepts now used.

The business sector should be clearly based and published on the concept of income from farming rather than farm income or farmers' income. Total income from farming should then be allocated to nonoperating landlords (as currently done), production contractors, business firms with farming as a minority activity and to farmers (those receiving self-employment income from their own business). This latter group should then be divided further into primary and part-time categories based on whether the majority or minority of their work time is used for farming. Average income from farming might then be calculated for primary and part-time units but not for more aggregate populations. Other meaningful disaggregations by value of sales classes or types of farms could be calculated for each subgroup.

The purpose of this clarification of concepts is to improve the information on who gains and loses as farm prices and incomes change. Most of these changes could be initiated with existing data although further changes in data sources would improve the allocations to suggested subgroups. The concepts of "business associated" (farming as a minority part of a multiestablishment firm), "primary" and "part-time" have been incorporated in some data collection activities by USDA and Census. The major gap in basic data is for calculating the portions of income and expenses for production contractors.

A second recommendation is to change the concepts and accounting rules in the calculation of total income from farming. The accounting process should agree as much as possible with the value added accounting process used in other national income work. This would result in a more correct estimate of gross output, separate current and capital accounts and other improvements.

The third recommendation is to separately account for income for the household sector involved in farming through existing, planned, or modified household surveys. The subgroup of households of primary interest are those receiving self-employment income from farming. This would include all members of partnerships and other multifamily operations rather than assuming one household per farm. Information on sources and levels of income as well as primary occupation of the person receiving farm self-employment income would need to be collected. Further division could then be made into the primary and part-time categories and income distribution could be tabulated so the relative importance of income from farming and resultant need for farm price and income programs could be more clearly understood. Special studies may be needed to reconcile the income from farming data collected from household surveys with comparable estimates made in the business sector accounts. Estimates of per capita income of the farm population should be discontinued since this is no longer a meaningful category for public policy.

Balance sheet of the farming sector.—The balance sheet is an estimate of current value of business and personal assets, debts, and equity. Like the income accounts, the balance sheet mixes the business and household sectors. Average figures across all farms are again relatively meaningless.

Structural change to more multifamily operations has made the estimates of personal assets and debts weak in an area where quality data is already difficult to obtain. Structural change bringing in new forms of capital such as from production contractors, farm service establishments, limited partnerships and vertically integrated industries has caused new problems with the accuracy and interpretation of the estimates.

Flow of funds accounts linking the income accounts and other sources of funds with the balance sheet and expenditure accounts have been constructed for the farm sector. These show

promise of providing useful information on the sector but also suffer from the problems associated with the income and wealth accounts such as the mixture of the business and household concepts.

RECOMMENDATIONS: The primary recommendation is to separate the concepts so these capital accounts include only the business sector. A special study is needed to determine the feasibility and appropriateness of including estimates of new forms of capital used in the sector. Another special study should determine the possibilities of constructing a return on equity capital for use as a new measure of sector performance. Such a measure might be a useful addition to the income measure for indicating the economic viability of this sector of the economy. Because of the wide heterogenity of the sector, meaningful subgroups such as primary and part-time operations, value of sales groups, or land tenure groups would have to be considered in this feasibility study.

Farm Productivity.—This series estimates labor productivity and total factor productivity for the farm sector. Structural change has also caused problems in the concepts being used in these measures. A major problem is increased importance of the farm input and agriculture services industries in farm production. Measuring labor productivity on farms is an inaccurate picture of performance of the farming industry when increased amounts of labor necessary to farm production is in these other industries, but not counted as labor used in production.

RECOMMENDATION: An examination of the farm productivity and efficiency data series to recommend changes in concepts, procedures and data sources has now been organized. This study will be conducted by a task force sponsored by the Economic Statistics Committee of the American Agricultural Economic Association, ERS and SRS. Recommendations from this study should be given careful consideration and full support.

Other farm sector indicators.—Assuring an adequate supply of food and fiber at stable or fair prices has long been an objective of public policy. To accomplish this goal an effort has been made to provide the farmer an adequate or fair price for his product. What that price should be to be considered a fair price causes severe conceptional and measurement problems in agricultural statistics.

The measure that has the longest term use for this purpose is the parity price ratio. This is based on prices paid and received by farmers in a base period assumed to be a time when farmers received a fair return from their business operation. Although the concept may still be fairly sound, the parity ratio statistics based on a 1910–14 base period are badly out-of-date and misleading. An indication of this occurred in the 1973-75 period when farm prices near 100% of parity resulted in profits large enough to bring big increases in land prices and rents to the land resource. Again, changes in the economic structure of the farm and farm input sectors make the 1910–14 period irrelevant as a base for determination of a fair price or return to farming activity.

In recent years a new concept based on cost of production has been partially substituted for parity prices. This concept also has a number of problems associated with it. Statistical measurement of costs across a large number of producers with different production methods is very difficult. Wide variance in efficiency of farming operations makes average cost figures a rough guide at best. Then questions exist about what to include in the measure for return to land since profits get reinvested in land causing a ratcheting effect underlying the use of this measure.

RECOMMENDATIONS: The parity price concept and related statistics should be discontinued. Indexes of prices paid and prices received are published for more recent base periods and can be compared for these more recent periods.

The index of prices paid should be changed by dropping out the prices paid for family consumption items. Although changes were recently made to use the Consumer Price Index for estimating this part of the index, having them in the index still mixes the business and household sectors.

Farm price statistics.—In addition to the problems in price indices and the parity price concept, there is an absence of well-defined concepts for what prices should be measured and where the measurement should occur. Again, structural change in the farm sector and in

input and product markets is a major cause of the problem.

Some agricultural commodities are heavily integrated or produced under contract so that only a very small portion of total output moves through open market channels. The old concept of a farm gate price is no longer adequate since some products are not priced at that point.

Similar problems exist with some of the spot market price data collected and reported by the Agriculture Marketing Service. Central and terminal markets that were once very active market points have declined in importance.

RECOMMENDATION: This is a very difficult area for development of new concepts. In general, spot market prices should not be reported where relative volume of a product is very small and "farm gate" prices should not be constructed for pricing points that no longer exist. Price points should reflect the marketing structure that exists and be updated as that structure changes. Any construction of values at another point in a commodity flow from farm to retail should be labeled as an estimated value rather than a price. More quantity measures should be used to weight price from market channels.

Special attention should be given to prices and price determination criteria in production contracts. A reporting system that includes contract terms and price variations for variations in quantity and quality of product should be developed.

Classifications categories for farm sector data.— Several ways to classify farm sector data are used by the Agriculture Division of the Census Bureau. These classifications are used as cross-tabulation categories to show comparisons and changes over time. Categories such as age of operator, farm size measured as value of sales, farm size measured as number of acres, land tenure, type of farm, race of operator, and legal form of business organization are examples of cross-tabulations for looking at structure of the sector. Recent improvements have been made to put more emphasis on economic form of organization and provide more information on multi-establishment operations and contract production. These improvements will also help differentiate more completely between closely held family corporations and more generally owned public corporations in farming.

Another important issue has been how to define a farm for statistical purposes. In particular, how large should a unit be before it is considered to be an economic farm unit for statistical purposes rather than just a home garden or activity to provide supplemental food for the household. The definition of a farm is important for at least two reasons. First, it defines the universe to be covered by the census of agriculture and some USDA statistical programs. Second, the number of farms is the denominator for several analytical measures computed by ERS including net farm income per farm. The Census Bureau has used size criteria since 1850 and has changed these minimum size criteria eight times since. The criteria used from 1959 through 1969 were (a) a place with 10 or more acres and $50 of product sales in a year or (b) a place under 10 acres which has at least $250 of product sales.

In August of 1975, a new definition was adopted concurrently by Commerce and USDA with OMB approval. The new definition raised the size cutoff to $1,000 total value of sales without regard to the number of acres employed. The 94th Congress enacted a law which required use of the 1959 definition through June 1976. Additional bills were introduced in the 94th and 95th Congress and hearings have been held by committees indicating that congressional concern about the change still exists.

There were several arguments in favor of implementing the definition to be a minimum of $1000 total value of sales. The Census Bureau has difficulty in identifying mailing addresses for very small units and thus obtaining a complete census of these units. The old definition was also outmoded by the rate of inflation which has occurred since the old definition was adopted in 1959. Another argument was that the analytical measures which rely on the total number of farms gives an unrealistic picture of the U.S. agricultural situation. The small units contribute little to agricultural production in relation to the number of such units so use of an indicator such as average farm income per farm has become increasingly misleading. Finally, excluding these farms will permit a reduction in reporting burden for the very small units.

The new definition of a farm was adopted for the final tabulations of the 1974 Census of Ag-

riculture. Data collected from the small units in that census is also published to enable data users to know the impact of the change and to facilitate adjustment of historical data series.

RECOMMENDATIONS: Categories to use for cross-tabulations of farm sector data should be modified. One change should be to clearly separate the business and household sectors so they are not mixed in cross-tabulations. Age, race, and ethnic origin are useful categories for family income tabulations but not important classifiers for production data.

A second change would be to initiate the use of new categories discussed earlier—business-associated, primary and part-time. Categories of specialization and concentration ratios for commodity production would also be useful in farm sector statistics. Finally, other categories that depict control over production of a commodity should be considered.

The statistical definition of a farm adopted in 1975 should continue to be used unless modified by law. This update in the minimum sales value cut-off is called for even though the recommendations for improvement in the farm income accounts discussed above make the total number of farms less critical in useful analytical ratios.

Price spreads, market basket and market bill.— These series are constructed by the Economic Research Service to provide information more broadly on the food sector. Farm-retail price spreads are calculated frequently for a number of individual commodities. A weighted spread and marketing costs are calculated for a fixed market basket of food items produced on U.S. farms as a second series. The third series is an estimate of costs for transporting, processing and marketing the total quantity of food purchased by consumers.

These series provide some useful information about the volume of economic activity in the food processing, transportation and distribution industries. They also provide useful comparisons of cost changes over time of a fixed basket of food products and an indicator of responsiveness of retail prices to changes in farm prices. This indication is primarily useful when the cost of the raw farm product is a majority of the total retail cost for the product.

The problems with these series are in how they are sometimes misused to imply inequitable or excess profit situations. Widening price spreads are frequently interpreted as unfair increases in profits in the processing and distribution industries without consideration for increases in other costs. Also, use of the term "farmers' share" reinforces some of the incorrect structural concepts on who the farmer or producer is and implies some equitable level of return to the farming activity in relation to total cost. Recent changes in these data series are movement to a new market basket to coincide with the new basis for CPI and attempts to obtain operating margins data from wholesale and retail firms by surveys. This latter change will provide the type of information needed to help avoid the misuse of price spread data.

RECOMMENDATIONS: The work underway to estimate operating margins on a regular basis should be continued. An alternative approach that should be considered is the construction of value added price indices for the processing, wholesale and retail industries. The term "farmers' share" should be replaced in the existing data series.

DATA GAPS

The major concept and measurement problems discussed above will require changes in how data are constructed, presented and used. The problems also identify the need for new data to fill gaps and provide a more correct and complete structural picture of the food and fiber sector. Other important data needs not closely related to the concept and measurement problems have been identified in agricultural and rural statistics.

Major data gaps identified in the discussion on concepts and measurement include the lack of information on contract production. Data to estimate the allocation of income and expenses between the contractor and the producer on the farm and to improve statistics on contract prices are needed. Another data need is a more complete picture of what is sold through interfarm transactions so gross product of the sector can be estimated more adequately. Some new data, especially for capital improvements made with on farm resources, will be needed to construct farm sector capital accounts separate from current accounts.

Although several household surveys exist or are planned for income data, they may not include a large enough sample for estimating the income of families that receive some self-employment income from farming. Samples may have to be augmented to provide the data needed on this minor portion of the population. Other data needs on new sources of capital in the farm sector and on operating margins of food wholesale and retail establishments are also indicated by the concept and measurement problems in agricultural statistics.

Improvement in the farm income account also requires filling other important data gaps. Inventory data that shows the volume of major crop inventories held by farmers in all storage locations is needed quarterly. Current data now reports stocks held on farms with all stocks in other locations assumed to be owned by someone other than farmers. Another very important data gap identified by the Advisory Committee on Gross National Product Data Improvement is quarterly information for expenditures in the farm sector. This data is now available annually and some assumptions on seasonal production patterns are used to allocate to quarterly estimates.

Statistics on foreign agriculture are generally inadequate for current needs. The Foreign Agriculture Service programs of reports by agriculture attaches is the main source for commodity supply and use data by countries. This reporting focuses on current estimates which are very weak for many countries, especially consumption and inventory data. The program has not maintained a good set of time series data as countries have revised and updated their historical estimates. Another very weak area is the lack of foreign commodity price statistics.

Data on land and water resources has been another important gap in agriculture. Although land has been inventoried and classified into current uses, the economic data needed to translate that into land supply functions for different agricultural purposes does not exist. The importance of irrigation to farm production requires improved data on supply and use of water resources.

Important data gaps exist in other parts of the food and fiber sector. More complete and frequent data are needed on the inventories, production, and use of purchased farm inputs. These data are especially needed for fertilizer and pesticide inputs which are used primarily in farming and which would, if in short supply, have significant impact on short-term farm output.

Agricultural service industries have been playing an increasing role in the food and fiber sector. The first data on this industry was collected as part of 1969 Census of Agriculture. A more complete coverage of establishments was part of the 1974 Census of Agriculture. The frequency and completeness of these data need further improvement.

The final major data gaps to be discussed briefly are for rural communities and people. Too little is known about their economic and social well-being as well as the process by which improvements take place. The lack of such data is a serious handicap in establishing meaningful rural development programs and policies. What is required for meeting these data needs is more attention to the rural population in the major demographic statistical programs. The decennial census of populations and housing is a good source of data but too infrequent. Plans for a mid-decade program will help a great deal as have new programs such as an annual housing survey and an expanded sample for current population statistics.

ORGANIZATIONAL ISSUES

The Statistical Reporting Service and the Economic Research Service function as central statistical and analytical agencies for the Department of Agriculture. Although the role of other USDA agencies in agricultural statistics is not as great, they are responsible for important parts of the total data system. The major issues within USDA relate to whether the statistical activities of these other agencies should continue or whether such activities should be a responsibility of SRS and ERS.

One of the issues is whether the split between domestic and foreign statistical and analytical programs should continue. This is an important issue because foreign markets have a significant impact on domestic prices. Thus, some believe the domestic and foreign statistics and analysis should be more fully integrated. The primary mission of the Foreign Agricultural Service is to

promote trade and sales of U.S. farm products rather than providing statistics. The agricultural attaches and program officers responsible for reporting foreign production and use data generally have no statistical training. Some of the foreign data work such as statistics on foreign trade of U.S. farm products and revision of foreign production and use data to provide a more accurate useful time series as countries revise their statistics are the responsibility of ERS or done jointly by ERS and FAS.

Another organizational issue is the split of agricultural price statistics work between SRS and the Agriculture Marketing Service. The primary reason voiced for consolidation is to remove the statistical activity from a program agency. Some believe the relative importance of the spot market price data would also then be more fully assessed in relation to other agricultural statistics work. Others believe the quality of the program would be improved by having it become the responsibility of the statistical agency.

The second major organizational issue for agricultural statistics is the division of labor between the Census Bureau in the Department of Commerce and SRS in the Department of Agriculture. Both provide statistics on the domestic farm sector as their primary mission although their programs are quite different. The Census Bureau uses a comprehensive survey of the entire farm operation to collect data once each 5 years from all farm operations. Most of this data is published for counties. SRS uses a large number of small surveys covering a few variables each to collect and report weekly, monthly, quarterly and annual data from samples of farm operations. These samples generally allow publication of State and national estimates. Both agencies collect and publish commodity production data so there are some duplicate statistics once each 5 years, primarily at the State and national levels.

This issue has been discussed for a long time but has received renewed attention in recent years. One reason for renewed attention are the improved sampling procedures used by SRS which require for less use of 5-year benchmark data from the census of agriculture for historical revisions. Another reason is the amount of time used by the Census Bureau to publish their survey data and other issues that raise questions about the quality and usefulness of the census program. Finally, the common need for a directory of names and addresses of farm operators has raised questions about why the programs are separate.

The third major organizational issue is what group within the Federal statistical system is responsible for overall development and improvement of agricultural and rural statistics. No effective mechanism exists to facilitate interagency discussion and resolution of issues. Further, although the USDA leadership has been very supportive of evaluation studies of the agriculture and rural data system, they have been much slower to implement recommendations from such studies.

RECOMMENDATIONS: The need for improved quality of foreign statistics is sufficient reason to seriously consider creation of a unit within SRS, the central USDA statistical agency, with responsibility for official estimates of foreign data. Such a unit would be responsible to improve procedures and use all available information sources to make and revise estimates. This might include some training for agriculture attaches, statisticians being stationed in major trading countries, increased use of remote sensing for data collection, update and revision of historical statistics as appropriate, and increased use of other data sources such as the Food and Agriculture Organization (FAO) of the United Nations. This unit might also be responsible to carry on AID projects intended to improve statistical programs in selected countries and to carry the U.S. role in helping FAO develop foreign statistical programs.

Most of the questions about the roles of the Agriculture Division at the Census Bureau and SRS in USDA imply that there is need for only one of these two agencies in agricultural statistics. This issue needs to be addressed through a careful evaluation of the needs for farm, food and fiber industry, and rural people and community data. Then a comparison of these needs with the strengths and capabilities of each agency including programs of all Divisions at the Census Bureau should be made. Such a study might show the need for both agencies in the broad subject of agricultural and rural statistics but call for some change in existing programs. For example, it would appear that program changes by the Census Bureau are most likely to meet data needs for farm input,

food processing, wholesale and retail industries, and rural people and communities. The Census Bureau could also meet the critical need for improved economic structure information on the farm sector because they use a comprehensive survey of the farm operation and because they also survey other industries that are involved in integrated or contract farm production. An entirely new set of economic structure and control information for major commodity subsectors would be possible by combining census data from farm, manufacturing, wholesale and retail trade surveys.

The major questions to be resolved would then be reduced to who should be responsible for county level production data, for improved land and water resource data, for improved consumption data on farm inputs, and for other economic data needs on the farm sector. This study should not be constrained by the fact that the current agricultural census survey is only every 5 years or that SRS has traditionally only surveyed for State and national level estimates. Possible uses of new technology such as remote sensing should also be considered in the roles to the played by each agency.

An interagency committee on agricultural statistics should be established to serve as a steering and decision group for the many conceptual, data needs and organizational issues. This committee is needed to develop and maintain a commitment for change and improvement in agricultural and rural statistics. Such change and improvement will nearly all have to be made within the Federal statistical system and an interagency committee is needed to direct and coordinate the activity.

METHODS AND PROCEDURES

This final topic under important problems and improvements covers a variety of issues in agricultural statistics that need attention. Survey and sampling methods and procedures have been greatly improved in SRS programs for commodity data during the past 10-15 years. Similar improvement is now underway for price statistics as allowed by available resources. The most recent major effort by SRS for improving the quality of their statistics is development and maintenance of a master list frame of farm operators and other establishments from which data are needed. More controlled and more efficient sampling can be done by SRS when this list is fully operational. As more resources are made available, this list frame can be the basis for reducing low response mail survey activities still used for some programs. These surveys currently have an unknown statistical error and an unmeasured response bias.

Although the intent of the census of agriculture is to survey all farm operations it is difficult in practice to include all operations, especially very small ones. The degree of incompleteness in the census of agriculture has been measured by comparing aggregate results with data from SRS sample survey programs. Although this is helpful, a far better procedure would be an independent measure of incompleteness by using a land area sample frame to sample for farms that have not completed a census questionnaire. This procedure should probably be used to measure incompleteness at the State level although county level measurement could be considered in states with large proportions of small farms.

New survey methods for agricultural statistics should continue to be researched and implemented where possible. Much of the recent research efforts have gone into use of satellites and remote sensing. The major payoff from this new approach may be in improved foreign crop production data. Use of producer and consumer panels needs to receive more research attention.

Long-term improvement in foreign agricultural statistics is greatly dependent on developing strong statistical programs in each country. The work of FAO and some AID projects which contribute to development of these programs should receive increasing support from USDA.

Agriculture Handbook No. 365, *Major Statistical Series of the U.S. Department of Agriculture: How They Are Constructed and Used,* is a fairly comprehensive documentation of many areas of agricultural statistics. The 11 volumes of this handbook should be updated and include more detail on all agricultural and rural statistics programs. Other efforts underway in USDA to document and provide general access to computer readable data bases should continue. A central point for locating and learning about agricultural and rural statistics has been under development by ERS. This should prove to be a

valuable service to other users of agricultural statistics.

A few other issues affect agricultural statistics just as they do other statistical programs. Statutory protection of data collected for statistical and research purposes is needed. The Freedom of Information Act as well as increased auditing and regulatory activity in government make it necessary to have this authority to hold data confidential. The timeliness of release for some agriculture statistics can be improved. Some data definitions, table formats and presentation can be improved to make statistics more comparable and useful.

NATIONAL ECONOMIC ACCOUNTS

Core Program

The functions of the Bureau of Economic Analysis (BEA) are to prepare the economic accounts of the United States and to interpret economic developments in the light of these accounts and other information.

The accounts provide a quantitative view of the economic process in terms of the production, distribution, and use of the Nation's output. This picture is disciplined—it appears in the framework of an interrelated system of credits and debits—and realistic, in the sense that it focuses on the institutions and transactions that determine the working of the economy.

These accounts are as follows:

The national income and product accounts, focusing on the gross national product, provide a bird's-eye view of the economic process.

The wealth accounts show the business and other components of tangible national wealth.

The balance of payments accounts give detail on U.S. transactions with foreign countries.

The interindustry accounts show how the Nation's industries interact to produce GNP.

The regional accounts provide detail on economic activity by State, metropolitan area, and country.

The accounts are supplemented by various tools for forecasting economic developments: surveys of the investment outlays and programs of U.S. business; econometric models of the United States; and a system of leading, lagging, and coincident business cycle indicators.

Most of BEA's work is published in its monthly magazine, *Survey of Current Business.* Other BEA publications are: *Business Statistics,* a biennial supplement to the *Survey;* special-purpose supplements to the *Survey; Business Conditions Digest,* a monthly compendium of economic indicators; *Defense Indicators,* published monthly; and *Long Term Economic Growth,* a periodic supplement containing historical series pertinent to the study of economic growth. BEA Staff Papers report on BEA research that is more specialized or less well-established than that published in the *Survey.* For use within the Government, BEA prepares analyses bearing on the formulation of fiscal, monetary, and other economic policies.

The national economic accounts are among the most important and widely used statistical outputs of the Federal Government. The accounts are used primarily in analyzing the current economic situation and in identifying and testing economic relationships that can be applied to project future economic activity and national growth as well as the probable economic impact of alternative Federal policies.

Major users include Federal policymakers such as the Department of Commerce, Council of Economic Advisers, Economic Policy Board, Federal Reserve Board, Treasury Department, Council on Wage and Price Stabilty, and Productivity Commission, who use the national economic accounts to monitor the stability and growth patterns of the economy as a basis for fiscal, monetary, and wage-price policymaking. The Department of Agriculture's Economic Research Service uses the accounts in preparing projections of the demand for food and fibers. The Office of Policy Development and Research within the Department of Housing and Urban

Development uses the accounts in analyzing and projecting the effect the economy and the Government's policies may have on the housing market. The Department of the Interior's Bureau of Mines uses the accounts in preparing projections of the demands for mineral base materials. Within the Department of Labor the data are used in analyzing and projecting changes in the employment level, composition of the labor force and prices. The estimates of real gross national product originating in private or individual sectors are an input for the Bureau of Labor Statistics series on output per man-hour (productivity) and the methodology for deriving the accounts serve as a guide for the Bureau's medium and long-ange projections of U.S. economic growth. The Office of Management and Budget uses the accounts to analyze the effect of economic assumptions on Federal tax receipts, expenditures for transfer payments, etc., needed to derive the President's budget estimates. The Federal Budget includes a table which shows the budget as a percentage of GNP and a special analysis which presents Federal expenditures and receipts in terms of the national accounts. Similar data are published in the *Economic Report of the President.*

Within the Congress the accounts are used by the Joint Economic, Ways and Means, and Finance Committees and the Congressional, House and Senate Budget Offices in evaluating economic performance and in analyzing the probable economic impact of alternative budget levels and proposed legislation.

The data are also used by State and local governments (particularly their planning offices), the business community, professional and labor organizations (such as the American Banker's Association and the AFL-CIO), by academia (particularly those universities which have developed growth models including the University of Pennsylvania, Massachusetts Institute of Technology, and Harvard), and organizations primarily engaged in economic research (including the National Bureau of Economic Research).

NATIONAL INCOME AND PRODUCT AND WEALTH ACCOUNTS

This work consists of the following:

Monthly personal income.—Personal income is the most comprehensive monthly indicator of economic activity and consumer purchasing power currently available. The estimates are prepared in considerable detail by type of income (wages and salaries, dividends, proprietors' income, etc.).

GNP estimates.—These estimates show GNP by type of expenditure, type of product, and sector, in current and constant dollars; gross domestic product in current and constant dollars; net national product by sector in current and constant dollars; implicit price deflators and alternative price measures for GNP and its components; personal consumption expenditures by major type in current and constant dollars; national income by type of income and industry division; corporate gross product in current and constant dollars; gross auto product in current and constant dollars; corporate profits by broad industry group, and corporate income taxes, dividends, and retained earnings; personal income and its disposition; the relationship between GNP, national income, and personal income; government receipts and expenditures; foreign transactions; and gross saving and investment.

Abbreviated quarterly estimates of this information are prepared. The greater wealth of underlying data permits the publication of considerably more detail annually than is possible for the quarterly figures.

Comprehensive GNP benchmark estimates are prepared based importantly on the results of the quinquennial economic censuses and the benchmark input-output tables. Revisions are made to the GNP estimates mainly for the period since the preceding benchmark.

Government budgets in the GNP framework.—The Federal and State and local budgets prepared within the GNP framework provide a means of gauging the effect of government fiscal policies on the economy. Detailed reconciliations between this concept of the Federal budget and the budget prepared by OMB are made on a quarterly basis and published annually. Also an analysis of the impact of the Federal budget on the economy is published annually.

GNP by industry.—Annual estimates of GNP by industry in current and constant dollars, and implicit price deflators are published annually.

Fixed business capital.—Estimates of the nonresidential fixed business capital of the United States are made annually. These cover gross and net capital stocks, depreciation, discards, and average ages of net and gross capital stocks. The estimates are provided by legal form of organization in historical-cost, constant-cost, and current-cost valuations, by type of structure and equipment, for farm, manufacturing, and for all other industries combined.

Estimates of the value of the Nation's stock of housing are made annually. These estimates show, in historical-cost, constant-cost, and current-cost valuations, the value of the farm and nonfarm housing stock, by type of structure—one-to-four dwelling unit structures, structures containing five or more dwelling units, mobile homes, and owner-and tenant-occupied dwelling units.

Business sales, inventories, and orders.—Estimates of final sales and inventories of business, in current and constant dollars, and inventory-sales ratios are published quarterly. Estimates of manufacturers' and trade firms' sales and inventories, in constant dollars, and inventory-sales ratios are also published quarterly. Estimates of manufacturers' and trade firms' sales, and of manufacturers' new and unfilled orders, in current dollars; and of manufacturers' and trade firms' inventories, in book values, are published monthly.

Size distribution of personal income.—Estimates of the size distribution of the personal income component of the GNP statistics are published annually.

Public and private debt.—Comprehensive annual estimates of public and private debt, classified by borrower group, are published annually.

The estimates are based upon data primarily collected by the statistical collection agencies such as the Bureau of the Census in the Department of Commerce, the Bureau of Labor Statistics in the Department of Labor, the Federal Trade Commission, and the Internal Revenue Service in the Department of the Treasury. Current data for the agricultural sector are collected by the Statistical Reporting Service and processed into the farm income estimates by the Economic Research Service of the Department of Agriculture, while quinquennial estimates come from the Census of Agriculture. The estimates for the Federal sector rely heavily upon information from the Department of the Treasury's Bureau of Government Financial Operations and the Office of Management and Budget. The Census Bureau's Governments Division collects data on the State and local government sector. A small amount of data generated by private trade associations and organizations such as the National Automobile Dealers' Association, the Motor Vehicles Manufacturers' Association, and the Mobile Home Manufacturers' Association are also used by BEA.

INTERNATIONAL ECONOMIC ACCOUNTS

The outputs of this activity include balance of payments accounts, which give detail on U.S. transactions with foreign countries; and the international investment estimates, which measure the international investment position of the United States. For the most part estimates are published quarterly and/or annually.

Balance of payments accounts.—This work consists of the preparation, development, and analysis of accounts which provide a comprehensive and systematic view of economic transactions between the United States and foreign countries. Major types of transactions covered are merchandise trade, travel, transportation, income on international investment, U.S. Government military and other services, U.S. private services, private remittances, foreign aid programs, short- and long-term private capital flows, and changes in foreign official assets in the United States and U.S. official reserve assets.

International investment estimates.—This work consists of the preparation, development, and analysis of estimates of U.S. direct investment abroad; foreign direct investment in the United States; income flows associated with these investments; and other economic transactions of multinational enterprises, including their trade, employment, taxes, and plant and equipment expenditures.

Data on the foreign transactions primarily are from the Census Bureau and the Treasury Department. BEA, however, does conduct some of its own surveys to collect some of the data.

INTERINDUSTRY ACCOUNTS

This work consists of the following:

Input-output tables.—Input-output tables depict how the industries of the Nation interact in producing GNP. They show, for each industry, the amount of its output that goes to each other industry as raw materials or semifinished products, as well as the amount that goes to the final markets—consumers, business investors, government, and foreigners. They also show for each industry, its consumption of the output of every industry, and its value added (the sum of compensation of employees, profits, proprietors' income, capital consumption allowance, etc.).

Comprehensive benchmark input-output tables are prepared approximately every 5 years. A relatively new program consists of summary annual input-output tables prepared in less industrial detail to update the benchmark tables.

Capital flow tables.—Tables showing flows from producing to using industries are prepared for the same years as the benchmark input-output tables.

The estimates are based primarily upon data collected in the quinquennial economic censuses conducted by the Census Bureau. The Bureau of Mines in the Department of the Interior and the Economic Research Service of the Department of Agriculture assist in preparing the input-output relationships in the mining and agricultural sectors, respectively.

REGIONAL ACCOUNTS

This work consists of estimates of total personal income, with total income subdivided by type of income and by major industry of origin, at the State level, for more than 3,100 U.S. counties and county equivalents, and for each of the standard metropolitan statistical areas (SMSA) and their constituent counties. Estimates of personal income by State are published quarterly and annually. The county and SMSA estimates are published annually and in addition, estimates of per capita personal income are provided.

The estimates of personal income, by county, are the basic source data for the annual estimates of State and county money income prepared by BEA for the Census Bureau's intercensal demographic estimates required for the general revenue sharing program.

ANALYSIS OF BUSINESS TRENDS

The outputs of this activity include surveys of business investment, econometric models of the U.S. economy, estimates of the costs of pollution abatement, a system of business cycle indicators, and analyses of the business situation. The work consists of:

Surveys and analyses of expenditures for plant and for equipment.—Quarterly data are collected and published in the *Survey* covering: expected capital expenditures for the current quarter and each of the next two quarters for all nonfarm industries, except real estate, professional services, and nonprofit organizations; actual expenditures for the same industries; the initiation and carryover of new investment projects by manufacturing companies and the adequacy of their existing plant and equipment in carrying out their expected operations over the next 12 months.

The Plant and Equipment survey lends itself to the inclusion of special questions relating to current economic problems and has been used to measure the effects various factors have on company investment decisions during the energy shortage, periods of financial stringency, etc.

Capacity utilization rates.—Quarterly data are collected and published in the *Survey* on capacity utilization rates, both operating and preferred, by manufacturing industries.

Econometric models.—Short-term forecasts of economic activity are made using a quarterly model of the U.S. economy consisting of about 150 equations. Medium-term projections of economic activity are made using an annual model of the U.S. economy consisting of about 100 equations.

Environmental statistics.—Annual estimates of capital expenditures and operating costs for pollution abatement are prepared within the framework of the national economic accounts and published annually. These estimates are classified by sector of the economy (consumers, business, and government), and by the

element of the environment affected (air, land, and water).

A series of questions on actual and expected business capital expenditures for pollution abatement is included in the annual survey of investment outlays and plans of U.S. business. The results, covering all nonfarm industries, except real estate, professional services, and nonprofit organizations, are published annually.

Statistical indicators.—This work consists of the preparation, development, and analysis of a system of leading, lagging, and coincident business cycle indicators, and data which depict long-term economic trends.

Role of Advisory Groups

The accounts have been a basic development of the U.S. economic statistical system over the last 45 years. The evolution of an integrated set of economic accounts within the context of a decentralized statistical system has provided a major impetus for improvements in Federal data collection. Thus, over the years, the role of the accounts in identifying priorities for improving economic data has acquired greater importance. A high priority also has been given to statistical improvements that increase the accuracy or timeliness of measures basic to the national accounts.

An important factor in the elaboration of the national accounts over the years has been the expanded level of economic information collected after the concepts and potential uses of the accounts were more fully developed. As noted earlier BEA is not a statistical collection agency as it conducts a very limited number of its own surveys. Rather, it relies almost entirely on data from non-BEA sources to construct the NIPA estimates. To keep apprised of changes in statistical series and to inform data providers of additional data needs, BEA maintains regular communication with the public and private sources of data used to prepare the national income and product accounts. For Federal agencies this interchange often occurs at interagency meetings held to discuss statistical areas of broad concern such as price statistics or employment statistics. These interactions have resulted in such various improvements as expanded coverage and increased detail of information collected via the Census Bureau's periodic surveys and censuses, additional tabulations by the Internal Revenue Service of information on tax returns, improvements in the wholesale and consumer price indexes computed by the Bureau of Labor Statistics and used in deflating estimates of GNP and in computing inventory valuation adjustments, and efforts by data collection agencies to provide information to BEA in a timely fashion for incorporation in its various accounts.

Federal and private advisory groups have also played an important role in the development of the accounts by alerting BEA as to user needs and data requirements. Some of these groups include the Federal Statistics Users' Conference, the Advisory Committee on the Presentation of Balance of Payments Statistics (responsible for the recent revisions in the tabular presentation of the balance of payments accounts), the National Bureau of Economic Research Conference on Income and Wealth, the Subcommittee on Economic Statistics of the Economic Policy Board and the Advisory Committee on Gross National Product Data Improvement.

Another important factor in the elaboration of the national accounts has been the general expansion in the supply of economic statistics. New survey data and tabulations of administrative records (e.g. social security) although undertaken for reasons other than for use in the economic accounts and despite conceptual differences have permitted development and refinement of the accounts that otherwise might not have been feasible.

BEA's ad hoc relationships with agencies have typically resulted in data improvements which were easiest to achieve or least costly to implement. The improvements were guided by BEA assessments over the years of the underlying data which it considered to be most in need of improvement and the recommendations of the 1957 report of the National Accounts Review Committee, *National Economic Accounts of the United States: Review, Appraisal, and Recommendations.* This report included selected data items in need of improvement along with its study of conceptual issues and extensions of the accounts into new subject areas. It was with the establishment of the Advisory Committee on GNP Data Improvement that the first comprehensive evaluation of the data base was undertaken independently of BEA.

Advisory Committee on GNP Data Improvement

In 1973, the Office of Management and Budget established the Advisory Committee on Gross National Product Data Improvement. The purpose of the Committee was to identify in a systematic way needed improvements in the quality and timeliness of the statistical data which are used in constructing the NIPA. The Committee's report which was completed in 1977 includes a 6-year plan for implementing the recommendations. The recommendations affect the programs of many agencies of the Federal Government and their implementation will be coordinated by the Office of Federal Statistical Policy and Standards.

The origin of the Committee reflected both the recommendations of the President's Commission on Federal Statistics and the recognition by OMB of the need for better information on which to base Government and private economic policy decisions.

In its report, the Commission recommended periodic evaluation and review of Federal statistical activities to provide a continuous system for strengthening and maintaining the quality of the statistics produced. It was suggested that such evaluations be coordinated by the Statistical Policy Division of OMB (now the Office of Federal Statistical Policy and Standards, U.S. Department of Commerce). In some cases the evaluations would be done with the collaboration of an independent agency or a group of representative experts without direct relationships with the Federal Government.

The need for better economic information was emphasized by substantial revisions in the estimates of GNP, in 1971 and 1972, which some Federal policymakers contended misled their analysis as to needed policy actions during critical phases of the business cycle. The review of the causes of these revisions clearly revealed that the estimates of the national economic accounts were constrained by the accuracy, timeliness and adequacy of the underlying data used in preparing the estimates.

As the last review of the national accounts was in 1957 and that review concentrated primarily on conceptual issues and extending the then limited set of accounts, a comprehensive outside review focusing on the national accounts' data base—its sources, weaknesses and recommended improvements—seemed appropriate if not overdue.

Six experts who were not directly associated with the Bureau of Economic Analysis were selected to serve on the Advisory Committee.

SUMMARY OF RECOMMENDATIONS OF ADVISORY COMMITTEE ON GNP DATA IMPROVEMENT

The recommendations included in the report reflect the views of the Advisory Committee on GNP Data Improvement. They should not be construed as necessarily reflecting the opinions of the Office of Federal Statistical Policy and Standards or of BEA.

In general, weaknesses in the data base used to construct the national income and product accounts result from the source data not being available in time for incorporation into the annual or quarterly estimates, inadequate coverage of certain economic sectors in ongoing surveys, and insufficient detail for national accounting purposes in the data that are being collected. Also it was found that some errors in the data could be attributed to problems with the sampling and estimating methodology used in collecting and processing the survey data. These data gaps necessitate various indirect estimating procedures and judgmental determinations in preparing the GNP estimates.

The Committee's recommendations either directly fill the data gaps or provide some more accurate proxy measures upon which to base the estimates. Suggested improvements include speeding up the availability of some series, expanding the coverage or detail in ongoing surveys, or devising methods of obtaining more frequent direct measures of particular economic activities through modifications of existing data collection instruments or the institution of new surveys. Suggested improvements in the sampling and estimating methodology of particular surveys are also specified, as well as some recommended improvements in the BEA estimating methodology. A highly selective list of major recommendations follows. The recommendations are not listed in order of priority.

Improvements for the Census Bureau's economic census program.—The censuses of agriculture, construction industries, manufactures, mineral industries, retail trade, selected service indus-

tries, transportation, State and local governments and wholesale trade are conducted every 5 years by the Bureau of the Census, Department of Commerce. These censuses are the major source of information used to construct quinquennial input-output (I-O) tables which provide benchmark estimates for the GNP components of personal consumption expenditures and producers' durable equipment. The I-O tables are matrixes which estimate the flows of goods and services through their intermediate uses and distribution channels until they are sold to final users. The tables are an important tool for economic analysis in their own right.

The majority of estimating problems in constructing the I-O tables result from (1) insufficient data for allocating certain goods and services between intermediate and final users and among classes of these two broad groups and (2) insufficient data in certain cases for estimating the transportation and distribution costs of goods. These data gaps generally can be reduced through more information on purchases of goods and services, more comprehensive reporting by establishment on product line of sales by class of customer, fuller information on gross margins, and extensions of coverage of the censuses to include industries for which little or no data are currently collected.

Major recommendations for the censuses include:

1. the collection of data on materials and services purchased by establishments as part of each economic census;

2. the extension of coverage from selected services to all services for profit;

3. the establishment of a quinquennial census of not-for-profit organizations and of the real estate industry;

4. the transformation of the present census of transportation into a census of transportation industries with a full complement of questions on inputs and outputs by relevant subindustries;

5. the collection of data on supplements to wages and salaries (e.g. employer contributions to social security, private pension, health and welfare funds) in all economic censuses;

6. the collection of additional information on inventories in appropriate censuses including book values at beginning and end-of-year, basis of valuation, stage of fabrication, commodity mix, and turnover period; and

7. the collection of force account construction and transportation payrolls.

Improvements for annual nonfarm data sources.—The annual revision of the NIPA estimates prepared each July provide more accurate readings on the state of the economy than the current quarterly estimates as they are based on a fuller set of data. Revised estimates are made for the recent year as well as the two preceding years to incorporate additional and revised information that has since become available such as benchmark and other types of revisions, statistics of income data, annual survey data, and data from annual time series. The annual data are considered more reliable than quarterly data as they include more observations, are under less severe time constraints resulting in improved accuracy in reporting and tabulation, and often contain more detailed information for allocating goods and services to final markets and industries.

The July revisions also are important because the quarterly estimates are extrapolated from these annual levels. Therefore, deficiencies in annual data affect the accuracy of the current quarterly estimates especially as to levels. To minimize such error, it is desirable to have as much data as possible for inclusion in the first July revision. Deficiencies in the existing data include: annual series not available in time for inclusion in the first July revision; lack of adequate annual benchmarks for some important quarterly series; insufficient detail on sales of products by type for use in estimating personal consumption expenditures; and the lack of both quarterly and annual measures resulting in interpolations and extrapolations from benchmark estimates.

To strengthen the annual data base, the Committee recommended such improvements as:

1. a speed up of the tabulation of the Census Bureau's Annual Retail Trade Survey so that the data are available for inclusion in the first July revision and obtaining increased detail on types of product sold or manufactured;

2. a speed up of the tabulation of the Census Bureau's Governmental Finances Survey so that

the data are available for the second July revision;

3. the implementation by the Census Bureau of annual sample surveys of the real estate industries and nonprofit organizations once the quinquennial census of services has been similarly expanded;

4. the collection of data in the Census Bureau's Annual Survey of Manufactures on inventories held in manufacturer's sales branches and other auxiliaries in addition to that collected on inventories held in processing establishments for a companywide measure of inventories;

5. the institution by the Federal Trade Commission of an annual survey to collect, from a sample of corporations included in the Quarterly Financial Report Survey, selected items from their audited operating statements and balance sheets. The data from the survey should be available for inclusion as an interim benchmark of the corporate profits estimates in the first July revision;

6. the modification of corporate and noncorporate business tax returns by the Internal Revenue Service to collect information on inventory valuation—the basis and methods of cost determination; and

7. the tabulation by IRS of Schedule M accompanying corporate tax returns which reconciles taxable profits and balance sheets with stockholder reports.

Quarterly data improvements.—The quarterly estimates of GNP and national income are used most often by policymakers, analysts and the general public in assessing U.S. economic activity. Significant revisions in the quarterly estimates have been of concern to users of the data and were a major factor for the establishment of this Advisory Committee.

As stated earlier the quarterly estimates are extrapolated or interpolated from the most recent July estimates for which annual data are available. Weaknesses in the quarterly estimates result primarily from incomplete information upon which to base the extrapolations, the lack of monthly or quarterly data for particularly significant and volatile sectors of the economy, inadequate coverage of sectors by some periodic surveys, and shortcomings in the survey methodology which result in inaccuracies or biases in the survey data.

In the consideration of improvements for quarterly NIPA estimates an important factor is the trade-off between timeliness and accuracy. In order to have timely estimates for policy and analytical uses, it is necessary to restrict the amounts of detailed data collected monthly or quarterly. The Committee has therefore decided that in some instances, improvements in annual data coupled with good, current proxy or cross-checking measures are sufficient. There are also improvements suggested for annual surveys which might later be extended to monthly or quarterly surveys once it has been determined feasible to collect such information more frequently without having a deleterious affect upon the timeliness of the data (e.g. more detailed information on product detail of retail sales).

An important recommendation concerns a change in BEA's quarterly estimating schedule. BEA currently prepares preliminary estimates 15 days following the end of the quarter and revised estimates 45 days after the quarter. The quarterly estimates are not revised after this latter estimate (except on very rare occasions) until the following July at the time of the first of the annual revisions. However, the estimate 45 days after the end of the quarter for a majority of the components is based on incomplete information. Many of the quarterly data sources are not available at the time of the 45-day estimate and final data from monthly surveys are often available for only 2 of the 3 months in the quarter at that time.

The Committee's recommendation is that BEA institute a 75-day estimate to incorporate the substantial amount of additional data that becomes available within the month following the 45-day quarterly NIPA estimate.

Some of the other major recommendations for improving the data base of the quarterly NIPA estimates include:

1. the strengthening of the Bureau of Labor Statistics' monthly employment and payroll survey (790) by increasing the response rate for the construction, trade, finance, insurance, real estate and service industries and by the collection of total wage payments including supervisory

workers payrolls, retroactive pay and irregular bonuses, for the entire month;

2. feasibility studies conducted by the Census Bureau to determine the effect on revisions and response rate of collecting revised monthly data from the same respondents in its monthly trade, service, and manufacturing surveys;

3. the institution by Census of a quarterly survey of a sample of State and local governments to collect expenditure information;

4. the expansion of items collected in the Federal Trade Commission's quarterly Financial Report to explicitly identify employer contributions, on an accrual accounting basis, to private pension (retirement), health (Blue Cross-Blue Shield, etc.) and welfare (life insurance, day care, etc.) employee benefit plans;

5. modification of the new survey of income of commercial banks (jointly sponsored by the Federal Reserve Board, Comptroller of the Currency, and Federal Deposit Insurance Corporation) so as to obtain quarterly tabulations of net income 65 to 70 days after the reference quarter and net income for domestic entities of the banking companies, as distinct from their foreign affilliates;

6. the expansion of the Census Bureau's Monthly Selected Service Receipts Survey to include private for-profit commercial and vocational schools; and

7. the consistent treatment of military goods with long production leadtime (e.g., ships, aircraft, missiles, etc.), whether on a cost-plus or fixed-price contract, to conform with the treatment of other industries by recording in the Census Bureau's Manufacturer's Shipments, Inventories, and Orders series unfinished items as work in process inventories and the actual shipment of goods as liquidation of inventories of finished goods.

During the course of the Data Improvement Study, the Census Bureau commissioned the National Bureau of Economic Research (NBER) to make an intensive study of means to provide more accurate measures of business inventories. Experimental surveys, company visits, delineation of conceptual issues, etc., are being undertaken as part of the NBER study, which is planned for publication in 1977. The Advisory Committee's recommendations for the improvement of inventory data, of course, are not as extensive as those that will be emanating from the NBER study. However, the Committee's review has aimed at identifying major existing weaknesses and recommendations which appear to be essential to a basic program for improving inventory statistics. Some of the recommendations include: in the Census Bureau's monthly and annual survey of manufacturing firms, the collection of companywide information on inventories including inventories held in facilities other than production plants and the introduction of a full probability sample of companies in the monthly survey; in the Census Bureau's monthly retail trade survey, suggested methods to maintain an adequate sample, the collection of sales and inventory data from identical respondents, and the collection of consistent information from the same firms on purchases, sales and gross mark-up as an alternative method of estimating change in retail inventories; and the expansion of the Agriculture Department's surveys of crop inventories to include those owned by farmers but held in off-farm storage facilities and the expansion of Agriculture's semiannual survey of cattle inventories to a quarterly survey.

Improvements for farm sector data.—A separate chapter of the report was devoted to the farm sector because of the size and volatility of the industry and the significant effect it can have on the Nation's economy. The improvements recommended by the Committee are aimed primarily at substituting direct information where extrapolations of annual data have been used.

The Committee recognized the difficulty of collecting some of the recommended new data because of conceptual and measurement problems—particularly where seasonals are involved. Some of the higher priority recommendations are:

1. the speed up of the collection of data on the movement of crops to market for soybeans, corn, wheat, and sorghum;

2. the refinement of the existing quarterly data on farm crops owned by farmers but stored in off-farm elevators and warehouses;

3. the collection of quarterly data on interstate sales and purchases of feeder and stocker cattle.

Price needs for improving GNP accounts in constant prices.—The extensive use of constant-dollar data and the related productivity measures in modern economic analysis justified an evaluation of price data needs. The Bureau of Labor Statistics (BLS) is the primary source of price information. It has an ongoing program for improving its price indexes which includes revising and extending the consumer and wholesale price indexes, greatly expanding the pricing program for exports and imports, expanding the item coverage of the indexes, and improving the quality of the data with a continuing emphasis on transaction rather than list prices. This program was supported by the Committee and a recommendation made that the necessary funds be provided to the BLS over an extended period for these improvements to be accomplished. The Committee recommended such additional improvements as:

1. the Census Bureau should develop quarterly output construction price indexes excluding land costs for nonresidential buildings as well as multifamily housing;

2. the BLS should increase the coverage of equipment items in the wholesale price index to give more comprehensive measures of price change for capital investment; and

3. the existing development program for preparing quarterly measures of defense purchases in constant price should be made a permanent part of the BEA program.

Improving the rest of the world account.—Recommended improvements for the current account of the balance of payments used in the GNP net export component include:

1. strengthening existing survey data by improvements of definitions, sampling coverage, timeliness, response rates and reporting accuracy;

2. instituting benchmark surveys to verify the universe coverage of some of the services and income elements; and

3. conducting and extending bilateral reconciliation of international trade and service transactions data with other countries.

Data needs in flow of funds.—The flow of funds accounts are prepared by the Federal Reserve Board and can be regarded as an extension of the investment and saving account of NIPA. The NIPA are the data source for the nonfinancial segment of the flow of funds system.

Major recommendations cited in this chapter include:

1. the tabulation of quarterly and annual reports of registered companies by the Securities and Exchange Commission to provide an integrated statement of income, balance sheets and source of financing;

2. the collection of quarterly data on cash and security holdings of State and local governments by the Census Bureau; and

3. basic research on the measurement of land values with respect to use, ownership, encumbrances, and intangibles related to natural resources and leases.

Some General Recommendations.—The Advisory Committee has also proposed several recommendations that are indirectly related to the data base used in deriving the national accounts. Implementations of the following recommendations would be of benefit to the many users of the national accounts and enhance their understanding:

1. the preparation and publication of a handbook on the GNP accounts detailing up-to-date concepts, sources of data and estimating methodology;

2. a reduction in the amount of time needed to complete the quinquennial benchmark estimates and the implementation of benchmark revisions at regular 5-year intervals;

3. the extension of the monthly personal income accounts to encompass the broad aggregates for the disposition of personal income, i.e. monthly estimates of personal taxes, personal consumption expenditures (with breakdown for motor vehicles, other durables, non-durables and services) and personal savings;

4. the creation of a capacity somewhere in the Federal statistical system for carrying out timely surveys on economic subjects on short notice when unexpected changes in the economic climate and the business behavior create the need for information that is not being collected; and

5. BEA should append to the release of its 15-day estimate, or some other vehicle, a brief

statement of the judgments used in preparing the NIPA estimates and their economic or statistical rationale.

Major Data Gaps and Recommendations

The discussion that follows identifies areas of BEA program enhancement some of which may have been under consideration for some time, others are a result of our changing times, interests and needs. Most of the more well-known data deficiencies of the national economic accounts have been identified in the report of the Advisory Committee on GNP Data Improvement and, therefore, will not be repeated here. In a few cases, however, due to the limitations of the Committee, a gap may have been touched upon only lightly and will, also be discussed in this Framework.

Measures of economic and social well-being.—The U.S. economic accounts have been criticized for not measuring the total societal costs associated with producing goods and services. Research is being undertaken in the United States (largely outside of government) and abroad to establish a conceptual framework and method of quantifying or estimating the value of these pluses and minuses.

There is sizeable disagreement in the economics profession as to whether and how these amenities or disamenities can be quantified. BEA, however, has had successful experience in developing a series on the relationship of pollution abatement expenditures and production and has identified additional areas for which there appears to be sufficient conceptual and statistical knowledge to begin such an effort. BEA's FY 1978 budget included a request for funding to begin work in this area.

BEA should be supported in its attempt to develop the conceptual framework, statistical methodology, and where feasible, measures that are relevant for evaluating changes in the economic and social well-being of the Nation consistent with the framework of the national economic accounts. Among the areas to be studied should be the following: a more comprehensive measurement of the Nation's tangible and intangible resources, for example, the stock of government capital and of consumer durable goods and the investment in human capital; the services provided by these resources; changes in working conditions, for example, those resulting from expenditures for occupational safety and health; and the impact of production and consumption on the physical environment and on social conditions, for example, the use of leisure time.

In addition, there should be an advisory committee appointed by the Office of Federal Statistical Policy and Standards to work with BEA in developing and evaluating these estimates. The committee should include representatives from Government and the private sector.

National wealth estimates.—Up to this time, the primary focus of BEA has been on the development of measures of the Nation's income and product. While BEA has developed measures of the value of stocks of fixed assets—houses, business structures, and machinery—(primarily based upon private research by Goldsmith, Kendrick, and others), little else has been done to develop measures of the Nation's wealth. Such data are particularly needed for the flow of funds accounts and related sectoral analysis (e.g., balance sheets and financial flows).

The BEA should institute a program to measure and maintain on a current basis estimates of the value of the Nation's tangible (e.g., land) and intangible (related to natural resources and leases) assets. The concepts and methodology evolving from the measures of economic and social well-being program will undoubtedly provide a basis for developing the wealth measures. Estimates by sector (government, business, and individuals) should be an ultimate goal. Again, as most of the research in this area has been outside the Government, an advisory group to work with BEA on this project is also recommended.

Quarterly real product by industry and type of product.—Estimates of quarterly GNP by industry and type of product, and real product by industry and type of product should be developed. Annual estimates by industry are available, and there have been requests from the Council of Economic Advisers and forerunners of the Council on Wage and Price Stability for a comparable series quarterly. The estimates would be useful for shortrun productivity and price analyses and would serve as a useful analytic tool during sudden shifts in the economy such as during the recent energy crisis.

Monthly estimates of GNP.—In 1973 BEA suspended its experiment, which had begun in 1971, to estimate GNP on a monthly basis. This effort had been undertaken as an attempt to provide a faster indication of the economy's performance which would be useful to policymakers and the general public as well. The experiment was suspended when it became apparent that due to data limitation, estimates of some components of GNP (e.g., inventories) were meaningless and causing erratic movements in the total series. In addition, BEA was faced with resolving perhaps conflicting requirements that the monthly estimates sum to the quarterly estimate and that the best estimate of monthly change in GNP be made.

As the recommendations from the GNP Data Improvement Project that call for the more frequent collection of some data are implemented and the state of the art (particularly expanded computerization in the private sector) permits the collection of additional monthly data, BEA should again try to develop monthly estimates of GNP.

Regional economic accounts.—Elected officials, and economic policymakers increasingly point to the need for improved regional statistics as it is continually demonstrated that State and local area economics diverge significantly from national economic developments with respect to longrun growth rates, sensitivity to national business cycles and responsiveness to national fiscal and monetary policies. In addition, the methods of allocating Federal revenue sharing and other grant program funds to States and local areas are complex issues which occupy all levels of government and are critically dependent on regional data.

Below are particular projects which BEA might undertake to meet of the need for more regional data.

1. Differential regional deflators of State personal income:

The technique used to deflate estimates of regional personal income (and disposable income) might be refined by the development of differential regional deflators. BEA currently uses the national personal consumption expenditure (PCE) deflator to deflate these regional estimates. However, the movement of prices can vary in different local areas as compared with the national movement.

2. Multiregional input-output (MRIO) tables:

Recently there has been significant interest in multiregional input-output (MRIO) tables. The tables should be coordinated and consistent with the national I-O tables and should show trade flows between States.

Most of the research for MRIO has been done at the Harvard Economic Research Project and Massachusetts Institute of Technology with funding from various sources, primarily from Federal Government agencies. BEA has been approached to assume the program as it would complement its regional economic analysis work and the national I-O studies.

There are several questions regarding the data and methodology to be used in the implementation of this program. Some of these concerns are:

a. the lack of sufficient data available for estimates of State economic activity and detailed industry distributions of purchases and sales to develop the tables without substantial amounts of judgment;

b. because of disclosure problems, some of the Census data on production—which are by-products of data collected for national estimates—would not be able to be used at State levels in the tables and would require estimation by the analyst (this problem could be greatly alleviated by the use of "protected enclaves", as recommended in Chapter IV-F on Confidentiality, that would permit statistical and research agencies to use such data);

c. data on interstate and intrastate (gross and net) flows of commodities and services are not yet adequate and would have to be constructed; and

d. extending the national I-O coefficients (which in themselves involve a good amount of judgement) to States would require qualifications and modifications to take into account the local variance in production and consumption functions.

3. State income and product accounts:

The development of annual estimates of gross State product and income for major aggregates

(personal consumption, expenditures, private investment, net foreign exports, government purchases, compensation of employees, proprietor's income, rental income of persons, corporate profits and net interest) would serve as a means of gaining more experience with and information on State level economic activity which would be particularly useful in developing the MRIO; and

4. Additional estimates for regional personal income:

This project would provide quarterly estimates of personal income at the SMSA and county level (now estimated annually) as well as constant-dollar estimates of personal income at the State level.

As these few projects show, the evolution of an integrated set of regional accounts is a major area which has ramifications on the future development of the Federal statistical system, problems of reporting burdens, and problems of maintaining confidentiality of data. The *1976 Economic Report* recommended that a commission be established to conduct a very broad study of the need for regional economic information. As yet, however, such a commission has not been established nor has there been any other systematic study of the need for regional information. As yet, however, such a commission has not been established nor has there been any other systemmatic study of the need for regional information. (The recently established National Commission on Employment and Unemployment Statistics will look at regional information needs but only regional labor force information.)

Therefore, it is recommended that the Office of Federal Statistical Policy and Standards establish an advisory committee to study and evaluate the further development of the regional economic accounts. The study should include the conceptual aspects and data base requirements of accounts. The advisory committee should be composed of outstanding scholars in the fields of regional economics and regional science. The recommendations from this regional economic accounts advisory committee should be a major element of any further study of regional data needs.

Program to Be Evaluated

As mentioned earlier, BEA has engaged in a relatively new program to make annual updates of the quinquiennial I-O tables. The purpose is to provide the many users of I-O data with more timely information than is available under the quinquennial I-O program. The rationale for the updates is that changes in the I-O coefficients occur sometimes over relatively short periods due to changes in technology, prices, product mix, etc. Discerning such changes more quickly would alert users of I-O and the national income and product analysts to changes in economic relationships requiring revisions in the applications of the data and to the possibility of revisions in GNP levels likely to arise in forthcoming benchmark revisions.

Annual tables have been prepared for the years 1961, 1966, 1968, 1969, and 1970. The objective of the BEA program is to provide updated tables at least 3 and no later than 4 years after the reference period. As yet this goal has not been achieved due to normal start-up problems and the impact of the recent GNP benchmark revision.

The data used to update the I-O tables are derived from annual statistics of the Internal Revenue Service, various annual surveys (primarily conducted by the Census Bureau such as the Annual Survey of Manufactures), and data from regulatory agencies, trade associations, etc. Much of these data, however, are not sufficiently detailed for I-O uses. The result is that the annual I-O tables are based to a greater extent on summary estimating methods and the judgment of the analyst than other BEA estimates. In addition the data used for updating the I-O tables are already incorporated into the national income and product accounts at the time of the annual July revisions.

Studies by BEA to compare annual I-O coefficients to those from quinquennial tables have indicated changes in relationships primarily for intermediate goods and services which do not affect GNP. There have been indications of changes needed in extrapolators used for estimating current measures of personal

consumption expenditures and other GNP components. However, this problem may be attributable to a general deficiency in the data collected on these expenditures which has been addressed by the Advisory Committee on GNP Data Improvement. The Committee's recommended improvements in the detail of data collected appear to be a basic and better vehicle for strengthening the quality of the current GNP figures than updated I-O coefficients.

It is recommended that an evaluation be made of the annual I-O program once the 1972 quinquennial and annual tables have been constructed. Particular attention should be paid to the costs of the annual program, the benefits derived therefrom and possible modifications in both programs. If the study concludes that the benefits derived are not justified by the costs, then the annual I-O program should be discontinued.

SCIENCE AND TECHNOLOGY STATISTICS

Science and technology (S&T) are implicitly embedded in much of the data collected by the Federal Government. This is not surprising considering that S&T are deeply ingrained in our culture and thus pervade almost all elements of our national fabric. Therefore, it would be conceptually incorrect to place all of these S&T-related statistics into a single functional area. Science and technology provide the tools with which we as a Nation achieve our objectives and these objectives are and should be the appropriate functional categories used to describe the Federal statistics program.

However, there exists one set of S&T statistics that is regarded as a distinct conceptually cohesive, functional group, namely the one dealing with the magnitude and nature of American science and technology. These statistics cover primarily the inputs to S&T activity such as human resources, funds, and institutions as well as some, though by no means all, of the outputs attributable solely to S&T activities.

As will be seen from the subsequent enumeration of Federal S&T statistical programs, the National Science Foundation is the principal generator and compiler of such data. This is in line with the Foundation's statutory authority, the National Science Foundation Act of 1950, and subsequent amendments, which authorizes and directs NSF:

> "to maintain a current register of scientific and technical personnel, and in other ways to provide a central clearinghouse for the collection, interpretation and analysis of data on the availability of, and the current and projected need for, scientific and technical resources in the United States."

> "... to initiate and maintain a program for the determination of the total amount of money for scientific research received by each educational institution and appropriate nonprofit organization in the United States from agencies of the Federal Government, and to report annually thereon to the President and the Congress."

Furthermore, NSF has also been assigned focal agency responsibility for the "development and analysis of information on the supply, demand, utilization, and education of scientific and technical personnel" by Executive order.

Users

S&T statistics, as defined above, are utilized by a variety of organizations. The Federal Government is one of the principal users since this information is required for the development of Federal science and technology policy. Organizations in the Executive Office of the President that extensively use S&T statistics include the Office of the President's Science Advisor, the Science and Technology Policy Office, and the Office of Management and Budget. In addition, all those agencies and departments that are heavily involved in science and technology related activities make comprehensive use of S&T statistics. These include the National Institutes of Health, the Energy Research and Development Administration, the National Aeronautics and Space Administration, the Department of Defense, the National Science Foundation, and the new Department of Energy. Congress is also a heavy user of S&T statistics, especially the committees that cover the activities of the agencies and departments listed above and those that

deal with S&T-related topics such as energy or the environment.

The private sector requires and uses S&T statistics. The higher education community, which has the responsibility for the training of new scientists and engineers, requires continually updated information pertaining to scientific and engineering human resources—supply, utilization, graduate student support, enrollments, etc. Furthermore, since this sector receives a significant amount of Federal R&D funds, it is also interested in statistics relating to these financial resources. Industry, the principal performer of R&D, is a heavy user of S&T statistics, especially with those dealing with R&D funding. Besides these institutional users, individual researchers in the science policy area depend completely on federally generated S&T statistics.

Statistics on Scientific and Technical Personnel

This review examines data collection activities of the Federal Government in the area of scientific and technical personnel, and is divided into two major sections. The first is concerned with a description of responsible agencies and core programs. The second is concerned with gaps and limitations in Federal statistics for scientific and technical personnel. (The reader should also see the comprehensive treatment of manpower statistics in the Framework chapter on labor statistics.)

Statistics on scientific and technical personnel may be classified as those primarily concerned with utilization, supply, and characteristics. Utilization statistics include such items as number employed, both in total and by occupation, employer, location, industry, educational institution, etc., and the relationship or utilization of scientific and technical personnel vis-a-vis other workers in total or in specific industries and economic sectors.

Statistics on the supply of scientific and technical personnel are concerned with the number of persons trained in science or engineering, the number of degrees awarded annually in science and engineering, immigration, and the mobility of scientific and technical personnel into and out of the total personnel pool and between specific fields. Supply statistics also cover such variables as attrition rates from the labor force, fungibility (substitution) of persons from one occupation or field to another in the science and engineering labor force and motivational factors leading to careers in science and engineering.

Statistics pertaining to the characteristics of scientific and technical personnel include demographic and economic elements such as age, education, race, sex, income, geographic location, employment status, work, activity, etc.

National Science Foundation.—The National Science Foundation (NSF) has primary responsibility within the Federal Government for the collection and analysis of statistics on technical personnel. The activities are carried out by the Division of Science Resources Studies. The data and analyses are published in three summary reports: Composite Report of the Manpower Characteristics System, National Patterns of R&D Resources, and Science Indicators.

The major NSF vehicle for developing information on the demographic and economic characteristics of scientific and technical personnel is the manpower characteristics system. This system was instituted in 1972 and became fully operable in 1974. It has three components, each designed to measure the characteristics of a particular segment of the scientific and technical labor market. The first component is concerned with the characteristics of doctoral scientists and engineers, and is obtained by a sample survey selected from the doctorate roster maintained for NSF by the National Academy of Sciences. Doctoral data are published periodically in *Highlights* and *Reports of Doctoral Scientists and Engineers*. The second component is the national sample of scientists and engineers maintained by Census Bureau for NSF. This allows for surveys every 2 years of a sample of those scientists and engineers who were in the science and engineering population at the time of the 1970 decennial census. This information is published in *Highlights* and *Reports of the National Sample*. The third component is a new entrants survey designed to obtain the characteristics of recent graduates entering the labor force. This survey is conducted for NSF by private contractors. Analyses and tabulations of these data are published in *Highlights of New Entrants to the Science and Engineering Labor Force*.

The manpower characteristics system develops information every 2 years for scientific and technical personnel on sex, race, age, highest degree, employment status, field of science, primary work activity, type of employer, geographic location, and other characteristics.

NSF collects statistics on the utilization (employment) of scientific and technical personnel in a number of sectors, including universities and colleges, nonprofit organizations, government, and private industry. Data for the university and college sector include utilization information by field of science, full and part-time employment status, sex, type of institution, educational attainment, and major function—teaching, research, etc. Data also are collected on the number of and sources of support for scientists and engineers holding postdoctoral appointments. Estimates of the full-time equivalent number of scientists and engineers engaged in R&D in private industry are collected for NSF by the Census Bureau on an annual basis. These estimates are available for major industries within the private sector, and cover such variables as net sales, size of firms, and employment, as well as R&D manpower information. Information on the Federal employment of scientific and technical personnel are developed by NSF based on data from the Civil Service Commission and are published in *Reviews of Federal Scientific and Technical Personnel*. In addition, occasional surveys are conducted on employment in nonprofit institutions and State and local governments. Recently, NSF has provided support to the Bureau of Labor Statistics (BLS) to help expand their occupational employment survey program in order to provide estimates of the employment of scientific and technical personnel by occupation and detailed industry within the private sector.

Basic data on the number of graduates majoring in science and engineering, by field and degree level, are collected by the National Center for Education Statistics (NCES).

Each year, NSF surveys information on the support of graduate students in scientific fields. The survey also produces graduate enrollment data as a by-product. Data are collected on sources and types of major support, by sex and citizenship status.

NSF supports and is the operating agency for the doctoral roster that is maintained for NSF, the Office of Education, National Institutes of Health, and the National Endowment for the Humanities by the Committee on Human Resources of the National Academy of Sciences. The doctoral roster is based on data collected in an annual survey of earned doctorates. Information is provided for detailed field of science, and for sex, race, citizenship status, and marital status. In addition to the basic demographic characteristics, data are developed on planned employment or postdoctoral study plans, and on the time lapse from bachelor degree to doctorate degree.

The data base on supply is augmented by information on immigrant scientists and engineers developed by the Immigration and Naturalization Service. Based on NSF analyses, these data serve as inputs to the estimates of supply and utilization and are presented in *Highlights of Immigration of Scientists and Engineers*.

Other Federal agencies.—Various other Federal agencies collect and analyze labor, demographic, education, and social statistics. Although some of these Federal data systems include information on scientific and technical personnel, none are primarily designed to collect data for this segment of the population. The scientific and technical personnel components of major Federal data systems are outlined below. These systems include those of BLS, Census, NCES, Health Resources Administration (HRA), and the Energy Research and Development Administration (ERDA).

The Bureau of Labor Statistics, Department of Labor maintains two data bases that include information on scientists and engineers. The Current Population Survey (CPS) is conducted monthly for BLS by Census in approximately 47,000 households throughout the United States. This survey (now being expanded) supplies numerous statistics on employment, unemployment, and labor force status, as well as extensive data on demographic, occupational, and industry characteristics. Although adequate for the purposes for which they are collected, the sample design and survey size do not generally permit the publication and use of data pertaining to scientific and technical personnel. Monthly unemployment rates for engineers, however, can be obtained from the CPS.

The CPS uses a "working as" or self-identification system to classify persons occupationally, and as such differs from NSF's manpower characteristics system, which uses additional variables such as education to classify persons into various scientific and engineering occupations.

The BLS occupational employment survey is a Federal-State program designed to provide employment estimates for detailed occupations in detailed industries. For scientific and technical occupations, data also are collected on the number employed in R&D activities. Starting in 1977 BLS is receiving support from NSF in order to help expand this system to all States and provide aggregate U.S. employment estimates for scientific and technical occupations.

In addition to the CPS, the Census Bureau collects a wide range of data on the labor force status and the economic and demographic characteristics of those in many scientific and technical occupations as part of the decennial census. Again, data are collected using a "working as" concept.

The National Center for Education Statistics in the Department of Health, Education, and Welfare collects data on earned degrees by specific field of science and technology, and by sex, race, and geographic location of schools. Information on earned degrees provides basic inputs to the NSF system for estimating the supply of scientific and technical personnel.

The Health Resources Administration in the Public Health Service is the locus for health manpower statistics in the Federal Government. Some of those in the health field are engaged in research and as such are included in the national science and engineering statistics.

The Energy Research and Development Administration collects data on the employment of scientific and technical personnel in the nuclear energy field. In addition, programs are underway at ERDA to develop bases on the numbers of personnel, including scientists and engineers, engaged in other areas of energy development and utilization.

Statistics on Scientific and Technical Personnel–Limitations and Data Gaps

A number of criteria can be employed to assess the adequacy of Federal statistics on scientific and technical personnel. These criteria include timeliness, quality, comparability, and the relevancy of the data to the needs of policymakers and other users, both currently and in light of anticipated needs.

This review makes no attempt to list ad infinitum all possible "gaps" and limitations in the data. The mere fact that certain data elements are not available does not constitute a gap or limitation. Gaps and limitations exist only to the extent that they affect the utility of current data to actual or potential users, or when the absence of specific data systems or elements significantly limits policymakers in their decision processes.

Thus, any discussion of the adequacy of Federal data on scientific and technical personnel must revolve around the uses of the data. For example, data on national levels of employment and unemployment are collected and reported monthly because such data are considered to be important in monitoring our economic well-being and are considered key economic indicators. For the same reasons, are monthly data needed on scientific and technical personnel? Data on employment of scientific and technical personnel, with the exception of engineers, are available only once every 2 years. This would seem adequate for periods of relatively low unemployment. In the past, when technical manpower unemployment increased significantly, a special one-time survey of current unemployment was carried out by NSF. However, this seems insufficient and a system should be developed to measure technical unemployment on a bimonthly or quarterly basis during periods of high unemployment or during periods of rapid economic change.

Related to the above limitation is the current inability to determine the labor market experience of recent college graduates who major in scientific and technical subjects. Such data can serve as an early warning system as to possible labor market problems for all scientists and engineers, and has serious implications for career guidance programs and science education policy. NSF's surveys of new entrants attempt to meet this need; however, results of these surveys are available only every 2 years.

Serious data gaps also exist with respect to the utilization of women and minorities in science and engineering. Data on sex and race are developed as part of the NSF manpower charac-

teristics system. Since data on the utilization of scientific and technical personnel are collected by sample surveys, questions arise as to the statistical reliability of the data. This is a complex problem involving constant trade-offs between benefits and costs. Thus, a sample may be adequate for data on female scientists by field, but inadequate for an analysis of female scientists by field, and by race. Data on employment of scientific and technical personnel by detailed industry collected by BLS are not available by demographic characteristics such as race and sex.

Users of NSF data have consistently requested utilization data classified by a finer field or specialization break than is currently available. Although important to an understanding of the utilization and characteristics of scientists and engineers, such data also are needed to better understand the dynamics of the scientific and technical labor market. Lack of these data inhibit the analysis of supply by obscuring mobility patterns and supply response to marginal changes in relative wages.

Data are also lacking on the possible underutilization of scientific and technical personnel, and on the related question of the employment of those trained in science and engineering in "nontraditional" fields. However, measurements of underutilization are difficult since subjectivity is often a controlling factor. The extent of the utilization of scientific and technical personnel in nontraditional fields—especially at the Ph.D. level—has far-reaching implications for science and science education policies.

Scientific and technical manpower data developed by NSF and others contain little if any information on the utilization of social scientists in the private sector. Recent NSF efforts in developing the manpower characteristics system represent a start in overcoming this shortcoming. Much work, however, remains to be done. Particular problems center around defining and measuring the utilization of these workers in the private sector.

The number of degrees awarded in the social sciences has been increasing at a rapid rate, and the current inability to adequately measure the utilization of persons trained in the social sciences understates the magnitude of the scientific and technical population. In addition, this gap prevents the identification of possible problem areas in the social science fields or areas of opportunity. This gap is especially serious since increasing emphasis is currently being placed on people-oriented R&D, the type of work frequently performed by social scientists.

The analysis of scientific and technical manpower is limited by lack of information on the utilization of technicians and technologists, especially in the private sector. NSF is taking steps to obtain the needed utilization data as part of the support to BLS.

Data on the utilization of scientific and technical personnel in State and local governments and nonprofit organizations are collected on an infrequent basis. The last survey of the utilization of scientific and technical personnel in State governments was for 1972-73; for local governments, the latest data are for 1968-69; and in nonprofit organizations, the latest data are for 1973. Statistics available on so infrequent a basis inhibit the analysis of the utilization of scientific and technical personnel, and may mask significant trends in utilization. The lack of data also presents problems in identifying both problem areas as well as areas of opportunity.

Also lacking are measures of the quality of our scientific and technical personnel. The scientific and technical labor force is increasingly better educated in terms of length of education and training. However, it is not clear that there is a uniform relationship between years of education and quality of the work force. The issue of quality is complicated by problems associated with measuring the output of scientific and technical personnel and the inability to find suitable quantitative measures.

Data relating to the impact of technology on the utilization of scientific and technical personnel need to be improved if current utilization patterns are to be understood and future utilization levels projected. Related to the above concern are data needed to measure the changing job content of various scientific and technical occupations.

Little data are available on the impact of productivity on the utilization of scientific and technical personnel, and the contribution of these personnel to changes in productivity.

The nonavailability of certain data elements may be more serious. For example, there is a

lack of data on retraining of scientists and engineers, and on the extent and composition of informal training received by these workers. Additional data are needed on the attrition of the scientific and technical work force. More needs to be known about death, retirements and other separations from the labor force to help develop sound supply-demand analyses and projections. The need for better attrition data is especially critical to an analysis of the need for scientists and engineers in universities and colleges.

The entire field of statistics on scientific and technical manpower is additionally complicated by the lack of an uniform taxonomy for scientific and technical manpower. Without an uniform taxonomy, statistics developed by one agency may not be of use to another, thereby reducing the effective utilization of available information. In 1966, NSF was directed by OMB to develop standard concepts and definitions for scientific and technical manpower. Although concepts and definitions have been developed by NSF, in consultation with other interested public and private parties, a uniform taxonomy is not in general use.

One of the most serious limitations in developing a fully operational system is the inability to translate a data base into a dynamic system suitable for input to policy decisions. Only limited progress has been made in measuring the effects of Federal programs on scientific and technical personnel. Federal agencies, through support of R&D, science education, and by funding other activities and imposing regulations influence career choice, training, and the employment of scientists and engineers. NSF has funded some studies to assess the impact of energy and environmental programs on the employment of scientific and technical personnel, but a comprehensive system which would require manpower impact assessment by all agencies has not been developed.

Financial Statistics on Science and Technology

Science and technology financial data collected and maintained on a nationally aggregated basis within the Federal Government are currently limited to research and development and, to a lesser extent, scientific and technical information activities. Studies of the financing of R&D activities are principally concerned with the flow of funds among the four economic sectors—Government, industry, universities and colleges, and other nonprofit institutions—between the sources and performers and with selected characteristics of R&D activity.

These data serve a wide range of needs and interests at various levels of Government, industry and academia by providing the basis for planning and policy formulation and analytical studies in the area of science and technology resources. This is accomplished through the development of quantitative benchmarks and a historical record of quantitative change over time, by providing a general broad-spectrum body of descriptive data and by identifying significant trends and characteristics.

National Science Foundation.—The National Science Foundation is the principal agency within the Federal Government for statistical data and analyses on the financing of science and technology activities. Within NSF, these activities are carried out by the Division of Science Resources Studies through a series of recurring and ad hoc surveys and studies. Recurring survey reports provide information on the magnitude, distribution and characteristics of R&D financing over time. These take the form of early, brief summaries (e.g. *Highlights,* bulletins and press releases) and published final reports. Ad hoc studies focus on special current issues and appear in staff or contractor reports for either internal or general distribution. Quick response surveys are undertaken as needed to deal with current issues for which rapid turnaround is essential.

Information is collected for each of the four major sectors of the economy—government (including Federal, State, and local), industry, universities and colleges, and other nonprofit institutions (such as independent research institutions and nonprofit philanthropic foundations) with respect to source of funding and R&D performance. Each of the sectors is surveyed to obtain information on the relative emphasis placed over time on various characteristics of R&D activities such as basic research, applied research and development and fields of scientific research. Other data elements selected for collection are more specialized and are unique to the particular sector being surveyed: these provide

special insight into its scientific and technological activities.

The Federal Government.—The basic source of information on Federal support and performance of research and development activities is the annual survey conducted by NSF staff, Federal Funds for Research and Development and Other Scientific Activities. Data are collected from Federal agencies for a 3-year period: the last completed year, the current year, and the budget year. Information is obtained on source of financing by agency and agency subdivision and on R&D performer (by sector) with respect to character of work (basic research, applied research and development), field of science, geographic distribution (by State and foreign country performer) and on funding of R&D plant. An historical review is provided for a 10-year period in each report. A separate section of the survey collects data on support for scientific and technical information covering a broad range of activities including publication and distribution; documentation, reference and information services; symposia and audiovisual communication; and R&D work in the information sciences.

A different approach to describing Federal funding of R&D is provided in an annual study, An Analysis of Federal R&D Funding by Function. The study is prepared by NSF staff and first appeared in 1971. It provides a view of Federal R&D programs in terms of their primary purposes rather than by agency missions. The 14 functional categories and 40 subfunctions reflect national concerns as viewed from the Federal sector and provide a complete array of the relative support directed to different categories of effort. These data highlight shifts in priorities among functional areas and significant program changes.

Various aspects of Federal R&D activity are explored in detail by special ad hoc surveys which serve to supplement the larger periodic reports. The energy R&D activities of Federal laboratories, for example, were described in a special report, *Reviews of Data on Science Resources. Energy and Energy Related R&D Activities of Federal Installations and Federally Funded Research and Development Centers: Funds FY 1973-75 (est) and Manpower, January 1973-75 (est).* Data were provided on the nature of the Federal energy R&D activity, sources of support and performers.

State and local government.—Data on State and local Government R&D activities had been collected by the Census Bureau on behalf of NSF. Data are provided for character of work (basic research, applied research and development), functional area, source of funds, fields of science and performer. Only a limited historical overview is provided.

Industry sector.—Statistical accounts of the research and development activities of industrial firms are collected in an annual survey conducted for NSF by the Census Bureau. The data are published in an NSF report, *Research and Development in Industry* which covers R&D expenditures with respect to sources of funds, character of work, field of science for basic research and geographic distribution. Additional data elements peculiar to the industrial sector include net sales, product field of applied research and development, a breakdown of costs (e.g. payroll, materials, etc.) and size of company.

Various ad hoc studies have provided additional in-depth information on the basic research needs of industry and research and development in various industries such as chemicals and allied products, electrical equipment and communication, and aircraft and missiles.

Universities and colleges.—NSF has two ongoing annual surveys dealing with the university and college sector.

The first obtains Federal obligations data from the 14 agencies that provide major support data for academic science in the university and college sector. Data collected include obligations to individual institutions for R&D; R&D plant, facilities and equipment for instruction in science and engineering; fellowships, traineeships, and training grants; general support for science; and other science activities. These data are described in an annual NSF study, *Federal Support to Universities and Colleges, and Selected Nonprofit Institutions; A Report to the President and Congress.*

R&D expenditure data are also collected by NSF directly from educational institutions and reported annually in NSF's *Expenditures for Scientific and Engineering Activities at Universities and Colleges.* Data are provided by source of funds, geographic distribution, field of science, institutional control, type of R&D activitiy, type of in-

stitution according to degrees granted in science and engineering. Information is also provided on capital expenditures for research, development and instruction in science and engineering; on current direct expenditures for instruction and estimates for departmental research.

Nonprofit sector.—Data collected in an NSF survey conducted periodically on the R&D activities of independent nonprofit institutions include information by source of funds, field of science, type of institution, and geographic distribution. In addition, there is information on capital expenditures. Surveyed organizations include research institutes, nonprofit administered federally funded research and development centers, voluntary hospitals, private foundations and other nonprofit organizations. Information is reported in an NSF publication, *R&D Activities of Independent Nonprofit Institutions*. Nonprofit R&D data are also reported in an annual NSF publication, *Federal Support to Universities, Colleges, and Selected Nonprofit Institutions* for those institutions which have received $300,000 or more in Federal R&D obligations.

National overview of R&D funding activities.—The publications which provide overviews of funding activities deal with all major economic sectors and derive their data entirely or mainly from NSF's recurring individual sector surveys. As such, their data components are restricted to those elements describing R&D activities common to all sectors.

Data collected from the sectorial surveys are consolidated into national totals and appear in the annual NSF overview publication, *National Patterns of R&D Resources*. The report focuses on the flow of funds from source to performer and an intersectorial transfer of funds. The data are arrayed in a series of matrices which provide an overall prospective over time of the funds and the changing roles of the performers. R&D funding patterns are illustrated in terms of Federal and non-Federal funds, by selected objective (e.g. defense and space-related activities) with respect to gross national product. Trends in intersectorial transfer of funds and with respect to character of work are also included. An important feature is the time series (from 1953 on) provided for intersectorial transfer of funds and sources of funds by character of work.

Another overview of R&D funding is provided in a publication, *Science Indicators*, prepared by NSF staff for the National Science Board. The report incorporates current data provided by NSF surveys and other sources and presents a series of indicators designed to demonstrate the strength and weaknesses of U.S. science including international comparisons of R&D funding levels.

A third perspective is provided by another NSF study, *1985 R&D Funding Projections*. Projections are provided for total R&D funds by source and performer.

Other Federal agencies.—In addition to NSF, there are other agencies which collect and analyze science and technology statistics.

The Smithsonian Science Information Exchange collects, processes for storage and retrieval, and disseminates information on basic and applied research being conducted, by the Federal Government and the private scientific community. Studies are prepared on request of the number and types of research activity underway in a specific area or discipline. Data elements provided include source of funds, R&D performer, location of performance, most current year project was underway, research area or discipline (e.g. dental research, cancer research). Data are not aggregated except in response to a specific request. Reporting is voluntary although some Federal agencies and private organizations have established mandatory internal reporting requirements. Frequency of reporting varies with the organization (monthly, quarterly, annually, etc.). Coverages of federally supported research are estimated to be 80% to 90% of total projects; coverage of major nonprofit foundations is considered to be good particularly in the medical sciences; very limited coverages of industrial and university sponsored research. There is also international coverage of cancer and energy research collected from international organizations and government ministries.

The Department of Commerce's Bureau of Economic Analysis conducts a periodic survey of U.S. investments in foreign countries in which it collects information on total R&D expenditures abroad. The last survey collected 1966 data and the next one is expected to be for 1977 data. BEA will publish the results in the *Survey of Current Business*.

The National Institutes of Health's Division of Resources Analyses prepares a series of specialized and recurring reports focusing on various dimensions of financial support for medical and health related research and development. The reports are based on data collected from a Federal health survey and available data published by Government and private organizations. Data elements include total obligations for support in terms of performer, source of support, and field of science; information is also available by individual performing institutions but only in terms of total R&D obligations.

NIH also publishes annually a report on the Department of Health, Education, and Welfare's obligations to institutions of higher education and other nonprofit organizations which is based on data compiled by the National Science Foundation. The report contains data by source of support, beneficiary institutions, type of obligations, and regional distribution. Information is also provided separately by type of institutions, medical schools, universities and colleges, nonprofit hospitals, and other nonprofit organizations.

These data appear in publications of NIH such as the monthly *NIH Data Book* and the annual *NIH Almanac*. They also appear in publications of agencies such as the *Social Security Bulletin* which uses NIH data for its national health expenditures series. NIH also plans to publish health R&D data for the period 1968-75 in a forthcoming publication.

The Securities and Exchange Commission (SEC) collects annually R&D funding data from publicly owned corporations as part of its general financial reporting requirements. Funding information is provided on total company R&D expenditures (both domestic and foreign) and the sources of the funding, whether company-own or Federal funds. Only those companies whose R&D expenditures exceed 1% of total sales and revenues are required to report this information. The data are maintained by SEC in files by company and are not aggregated. SEC does not publish or analyze the data.

The Federal Power Commission publishes a number of studies containing data on the operations of public and privately owned utilities. Included in these reports are statistics on the financing of R&D activity. Two reports, *Statistics of Privately Owned Electric Utilities in the United States and Statistics of Publicly Owned Electric Utilities in the United States* are published annually including summary data on total R&D expenditures for all utilities. Included also are total R&D expenditures as a percent of total expenditures by source of funding (intramural and extramural). Data are provided by various classes such as hydroelectric, nuclear power, fossil fuels, transmission, distribution, environmental effect, systems planning, etc. Data cover a 3-year period including the current year and the preceding 2 years. Similar information is also developed for gas utilities.

Gaps and Limitations in Statistics on Funding of Science and Technology

As noted earlier, the only area of science and technology activity financing for which a major, ongoing data collection and analysis effort is maintained is research and development and even here, a complete picture is not currently available. Missing from national R&D and R&D plant expenditure totals are data on social science research in industry, departmental research in universities and colleges, R&D plant expenditures in the industry and academic sectors, and more than periodic benchmarks on R&D funding in State and local government agencies. Taken together, these elements are felt to represent only a small portion of the Nation's total R&D expenditures. They do however, represent virtual blanks in the accumulated knowledge of R&D activity in the United States.

There are also examples of data on R&D financing whose utility is restricted somewhat because of their limitations. Such is the case with data on industrial R&D expenditures. Requirements for confidentiality of individual company data significantly reduce the types of comparative analysis with other types of industrial data to a few aggregated items. Another limitation of the data on industrial R&D financing results from the current practice of obtaining data at the company level. Data for large conglomerates whose industrial activities encompass several SIC categories are included under the primary product line of the company line of the company. Efforts are currently underway by NSF to determine the feasibility of obtaining data at the division or establishment level of the company. Although individual company R&D data for public companies do exist in

SEC files, definitional and classification limitations prevent meaningful comparisons with other forms of industrial economic indicators.

Also missing are nationally aggregated financial data on research and development by objective or function such as health, environment, transportation, etc. Such data do exist for Federal obligations but not for the R&D activities of the remaining sectors. Furthermore, even the Federal data are derived by NSF from budget information or major organizational units of Federal departments and agencies and as such, represent only a rather rough estimate. However, these data could probably only be improved by means of project-by-project reporting by the agencies which could be very costly both in terms of financial and human resources.

Similarly, little financial data are separately available for R&D activities of Federal inhouse laboratories. To date, other priorities within NSF and the participating agencies have prevented the compilation and reporting of data at this level. An effort is planned, however, to obtain these data in the near future.

Data collection for science and technical information (S&TI) expenditures on a national level is currently limited to science information activities of the Federal Government and again even here, data are known to reflect only a portion of the total Federal funds that go into the storage, retrieval and dissemination of scientific and technological information. The amount representing science and technical cost associated with R&D contracts and grants is excluded from available S&T data. At present, no feasible means of obtaining this information exists.

In both of these areas, the National Science Foundation maintains a continuous effort to overcome the limitations and gaps through attempts to develop concepts, definitions, data collection methodologies, and respondent cooperation.

Financial data on a nationally aggregated basis covering other activities that fall within the scope of science and technology activities are not available from any public or private source. Data on total science education expenditures by educational level are an example. At the present time, only data representing Federal obligations to universities and colleges for science education activities are available and published annually in an NSF report to the President and Congress entitled: *Federal Support to Universities, Colleges, and Selected Nonprofit Institutions*. Other examples of some major types of science and technology activities for which little financial data are currently available include the following:

—Total expenditures used in prospecting for mineral, geological, hydrological, and other natural resources.

—Total expenditures for astronomical, meteorological, maritime, glaciological, seismological and other scientific observations and measurements.

—Total expenditures for patent and license activities related to scientific and technological products and processes.

The availability of these data would enhance analytical efforts to describe past and current levels of activity and plans for future programs. Furthermore, they could greatly assist in attempts to negotiate international cooperative efforts in these areas.

Science and Technology Outputs

The identification of science and technology outputs is difficult and the subject of intensified current research. As is well known, science and technology have considerable effect on the social and economic conditions of all parts of society. Hence a great many of the economic and social data that are collected could be construed as measures of the output of scientific and technological activity. Unfortunately, these measures are very greatly affected by other inputs as well. Consequently, it is extremely difficult to relate changes in these measures solely to developments in science and technology. Of the few measures that have been identified up to now as more or less exclusively the result of scientific and engineering activity, several represent a comprehensive set of available data. These are in the areas of patents and citations. Studies of these indicators have appeared in the National Science Board's report, *Science Indicators*.

The Patent Office works to make the enormous file of patent grants useful for various purposes and to present the data in the file in various forms through various reports. These

spotlight the areas of technology experiencing a high level of overall activity or of foreign activity. Technologies of interest are followed over time, and geographic breakdowns are made of patents from the various States and foreign countries. The latest report adds descriptions of some individual patents and presents patents activity according to date of application, in addition to date of grant. There is also a description of the five U.S. and one foreign patents cited most often in U.S. patents granted in 1975.

All these published materials are taken from the Patent Office's computer file of patents, which was begun in 1970. At present, the file includes: subclasses of the U.S. Patent Classification System, relationship of the Standard Industrial Classification System in 52 Product Fields, and Product Field combinations. For U.S. patents issued since 1963, data are available on: the ownership at time of issue in seven categories (U.S Government, foreign government, U.S. corporation, foreign corporation, U.S. individual, foreign individual, and unassigned); the country or State of residence of the inventor; the data application for patent was filed in the U.S. Patent and Trademark Office; the specific (i.e. named) ownership of all which, at time of issue, were organizationally owned (e.g. by a corporation, foundation, government agency).

Currently, data on patents granted by foreign governments are being added to the files for the first time. The Patent Office also plans to add information on 600 large companies that own patents. Specifically, this will include data on the expenditures and sales of those companies going back about 20 years.

Transactions in royalties and licensing fees can be used as indicators of the transfer of technical know-how. The U.S. Department of Commerce keeps records of U.S. transactions in royalties and fees and publishes series data in *Survey of Current Business* under receipts (direct investment-related and unaffiliated) and payments (again separated into direct-investment related and unaffiliated). Additionally, a new publication has been published by the Bureau of Economic Analysis entitled *Revised Data Series on U.S Direct Investment Abroad 1966-1974*.

Publication counts can serve as an quantitative output measure of scientific research, especially basic research. Correspondingly, one measure of the overall quality of research is provided by citation counts, which indicate the frequency with which specific papers are cited in other publications. Extensive data compilations and analyses involving publications, citations and such related variables as field of science, sector of origin, and country have been developed in time series covering the last decade and have been published in the National Science Board's *Science Indicators* report.

The state of the art in science and technology output measurement is in its early infancy. Even those measures cited above are in need of further work. Attempts to develop additional indicators of output have been made for R&D activity and technological innovation but, to date, none have proved satisfactory. However, these developmental activities are continuing to explore new approaches.

CURRENT DEVELOPMENTS

REORGANIZATION OF THE PUBLIC HEALTH SERVICE

On September 30, 1977, the Secretary of Health, Education, and Welfare announced a reorganization of the leadership of the U.S. Public Health Service. Major responsibilities for program direction, policy development and management will be assigned to four deputy assistant secretaries and an executive officer.

The PHS reorganization is aimed at enabling the Department to respond more rapidly to emerging health problems, to help the Assistant Secretary for Health to direct and manage the six PHS agencies more efficiently, to improve his ability to develop health policy, and to strengthen HEW efforts to control rising health costs through the health planning program.

The major aims of the reorganization and the key changes, which will affect the Office of the Assistant Secretary for Health, the Health Resources Administration, and the 10 PHS regional offices, are as follows:

1. Simplification of the direction of PHS programs by assigning major leadership roles to three Deputy Assistant Secretaries:

The *Deputy Assistant Secretary for Health Programs/Population Affairs* will oversee major PHS program initiatives including an upgraded Health Maintenance Organization development effort, a health practices assessment initiative, and child health affairs; develop HEW family planning policy; and serve as principal deputy to the Assistant Secretary for Health.

The *Deputy Assistant Secretary for National Health Insurance*, who also serves as Special Assistant to the Secretary for NHI, will guide the Department's development of NHI recommendations which the Secretary will submit to the President in 1978.

The *Deputy Assistant Secretary for Special Health Initiatives* will develop special projects which cut across agency lines beginning with the child immunization campaign and the effort to upgrade St. Elizabeth's Hospital.

2. Improvement in policy development by transferring the National Center for Health Services Research and the National Center for Health Statistics from the Health Resources Administration to the Office of the Assistant Secretary for Health, placing the centers under a *Deputy Assistant Secretary for Policy, Services Research, and Statistics*. This reorganization aligns health policy, statistics and services research functions under a single official reporting to the Assistant Secretary for Health.

In addition to the advantage of sharpened decisionmaking, elevating NCHS to OASH will result in more effective use of NCHS as the agent responsible for the collection and analysis of general-purpose health statistics and for coordinating those statistics that involve cooperation with State and local agencies. Health data collection efforts will become more systematic and uniform and PHS ability to rapidly obtain data needed for policymaking and to resolve data policy issues will be enhanced.

Similarly, NCHSR's cross-cutting responsibilities as the primary source of technical and professional assistance in the area of health policy research and in the development of a national health strategy can be best realized by locating the Center within the principal OASH policy analysis staff. This action will also promote NCHSR as the PHS focus for health services research.

3. Focusing the energies of the Health Resources Administration on manpower development and state and local health planning.

4. Realigning the 10 PHS regional offices to strengthen State and local health planning activities by making the Regional Health Administrators the chief Federal health planning officials in the regions. The RHA's will also work with PHS agency heads to assure that PHS health care projects do not duplicate each other and are compatible with local health care needs and services.

5. Coordinating all PHS management activities in an Office of Management headed by the Executive Officer, PHS.

Secretary Califano has directed Dr. Julius B. Richmond, Assistant Secretary for Health (Surgeon General of the U.S. Public Health Service), to implement the headquarters reorganization effective October 30, 1977. It is anticipated that the new PHS regional structure should be in place by January 2, 1978. (JOHN BLAMPHIN, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, telephone (202) 245-6867.)

REORGANIZATION OF DEPARTMENT OF AGRICULTURE

The Department of Agriculture has announced a package of reorganization initiatives to realign units of the Department according to major function. The reorganizations are to provide opportunities for better management by focusing responsibility for similar functions in a smaller number of agencies and administrators, and by reducing the number of administrative officials reporting to the Secretary, the Assistant Secretaries and Directors.

The Statistical Reporting Service and the Economic Research Service are included in this reorganization. These two agencies will be combined with the Farmer Cooperative Service and the Economic Management Support Center into a new agency called Economic Research and Statistics Service. This change in departmental organization will allow the Director of Economics, Policy Analysis and Budget more time for the policy analysis and budgeting responsibilities. These responsibilities were added to the former Director of Agriculture Economics' position earlier this year.

Kenneth R. Farrell, Acting Administrator of the Economic Research Service has been given the responsibility to develop plans for initiation of the new agency. He has also been designated acting administrator of the new agency. (DONALD W. BARROWMAN, SRS, USDA, telephone (202) 447-6201 AND ALLAN JOHNSON, ERS, USDA, telephone (202) 447-8066.)

INDUSTRIAL PRODUCTION INDEX REVISED

In September 1977 the Federal Reserve Board index of industrial production was revised back through January 1976. The revised series reflect the use of monthly data previously unavailable as well as revision of some of the seasonal adjustment factors used in basic aggregate series. The effects of the small revisions of total IP were to raise the first quarter of 1976 somewhat and to lower slightly the last quarter. The annual average for the year as a whole was unchanged.

Copies of the revised 1976 data are available free of charge from the Publication Services, Board of Governors of the Federal Reserve System, Washington, D.C. 20551. (MARY HEDDA HILLARD, DIVISION OF RESEARCH AND STATISTICS, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, telephone (202) 452-3897.)

A NEW PERSPECTIVE FOR ESTIMATES OF HOURS LOST

The Bureau of Labor Statistics recently has published for the first time national estimates of hours lost by wage and salary workers as a result of illnesses and injuries and personal and civic reasons. (See "Absence From Work—Measuring the Hours Lost," *Monthly Labor Review*, October 1977, pp. 16-23.)

The data include estimates of aggregate hours lost, hours lost as a proportion of usual hours worked, and the incidence of absence. The data were collected in May, from 1973 to 1976. The series will be updated annually.

The rates of absence were derived from the Current Population Survey (CPS), through a comparison of hours worked during the reference week of the survey with hours usually worked, and the difference that was attributed to health, personal, and civic reasons.

The article answers questions such as:

1. How many hours do employees who usually work full time (35 hours per week or more) lose

as a result of illnesses and injuries? How many hours are lost because of personal and civic reasons?

2. What proportion of usual, or scheduled hours, does the lost time represent?

3. What proportion of workers who usually work full time are absent some time during the week?

4. What industries and occupations have the highest—or lowest—rates of absence? How much do absences vary by sex and age?

The article provides several formulas for computing absence rates and some indication of the costs of absence. It also relates the findings to other studies, including private surveys of establishments.

Single copies of Special Labor Force Report 207, which contains this article plus explanatory notes and supplementary tables, are available from the Bureau or any of its regional offices. (JANICE NEIPERT HEDGES, BUREAU OF LABOR STATISTICS, DEPARTMENT OF LABOR, telephone (202) 523-1821.)

BLS INDUSTRIAL PRICE PROGRAM: A SURVEY OF USERS

The Bureau of Labor Statistics (BLS) has recently completed a survey of current users of industrial price data as an early part of the effort to design a comprehensive revision of the Industrial Price Program. Responses to the survey indicate that most users consider these data to be generally appropriate for their purposes, although about two-thirds have also indicated a need for improvement.

Nearly half of the respondents were manufacturers who use the data primarily for forecasting price escalation in purchases and sales contracts as a measure of price trends, and as an inflation indicator. The majority of all users place more importance on indexes for detailed products than for groupings or for industrial sectors.

Survey results and tables summarizing respondents' views are contained in *The BLS Industrial Price Program: A Survey of Users,* Report 509. Copies of the report may be obtained from the Bureau of Labor Statistics or any of its regional offices. (JOHN ROYSE OR DERECK MOELLER, BUREAU OF LABOR STATISTICS, DEPARTMENT OF LABOR, telephone (202) 523-9093.)

WORK DISABILITY CHARTBOOK RELEASED

The Office of Research and Statistics of the Social Security Administration has released a chartbook summarizing highlights of findings from a national survey of the adult disabled population. The book presents an overview of economic, medical, and social consequences of disability for workers and their families.

Entitled *Work Disability in the United States,* the 44-page report includes 19 charts illustrating disability's impact on more than 15 million Americans limited in their ability to work because of chronic health conditions and impairments. Their situation is compared with that of the nondisabled by such variables as age, race, marital patterns, education, income, use of medical care, and employment.

Published by SSA's Office of Research and Statistics, the book is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, for $1.60, GPO Stock Number 017-070-00302-8. Single copies for official use may be requested from the ORS Publications Staff, Room 1120, 1875 Connecticut Avenue, N.W., Washington, D.C. 20009, telephone (202) 673-5209. (ROBERT E. ROBINSON, SOCIAL SECURITY ADMINISTRATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, telephone (202) 673-5576.)

CONTINUOUS WORK HISTORY SAMPLE

The Office of Research and Statistics in the Social Security Administration has released a 21-page report entitled *Sampling Variability in the 1-Percent Continuous Work History Sample.*

The 1–percent Continuous Work History Sample (CWHS) is comprised of selected social security numbers (SSN's). The report describes the selection of data for the sample, the issuance procedure of SSN's, the sampling frame, sample design, sampling variability, and design effects. Also presented are 13 tables of sampling variability. These tables provide a general order of

magnitude for similar estimates from the various files constituting the CWHS.

Single copies of *Sampling Variability in the 1-Percent Continuous Work History Sample* (HEW Publication No. (SSA) 77-11904 are available from the Publications Staff, Office of Research and Statistics, Social Security Administration, Room 1120, Universal North Building, 1875 Connecticut Avenue, N.W., Washington, D.C. 20009, telephone (202) 673-5209). (ROBERT E. ROBINSON, SOCIAL SECURITY ADMINISTRATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, telephone (202) 673-5576).

MONEY INCOME AND POVERTY STATUS IN 1976 OF FAMILIES AND PERSONS

The Bureau of the Census recently released an advance report entitled "Money Income and Poverty Status of Families and Persons in the United States: 1976." This report includes data on family money income distributions, on distributions for males and females based on the amount of their own income, and on the population below the poverty level, cross-classified by various demographic, social, and economic characteristics.

The income estimates compiled from the March 1977 Current Population Survey (CPS) were obtained from an expanded sample of households. This sample consisted of 65,500 housing units, approximately 10,500 more housing units than were used to develop income estimates from the March 1976 CPS.

The report focuses on changes in median family income and on changes in the poverty population between 1975 and 1976. This report indicates that the median family income in 1976 was $14,960, about 9% above the 1975 median. After adjusting for the 6% increase in prices between 1975 and 1976, the 1976 median in terms of constant dollars increased by $450 or about 3%. The number of persons below the poverty level decreased by about 900,000 or 3.5% from the 1975 figure. There were about 25.0 million persons below the poverty level in 1976 comprising almost 12% of the U.S. population. The poverty threshold for a nonfarm family of four in 1976 was $5,815.

The increase in real median family income between 1975 and 1976 reflected the recovery of the economy from the recent recession and the abatement of high-level inflation. The improved position of the economy is indicated by a 6% increase in the real Gross National Product between 1975 and 1976. During the same period, the average annual unemployment rate for the Nation decreased from 8.5% in 1975 to 7.7% in 1976.

More detailed income and poverty data for families and persons will appear in separate reports in this series to be issued later this year.

Copies of this report, "Money Income and Poverty Status of Families and Persons in the United States: 1976 (Advance Report)," *Current Population Reports,* Series P-60, No. 107 (31 pages, $.90) may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. (GORDON W. GREEN, JR., BUREAU OF THE CENSUS, DEPARTMENT OF COMMERCE, telephone (301) 763-5061.)

MARRIAGE HISTORY BY CURRENT FAMILY CHARACTERISTICS

The second of two reports on the marital history of adults born since 1900 was published by the Bureau of the Census under the title "Marriage, Divorce, Widowhood, and Remarriage by Family Characteristics: June 1975." The earlier report was entitled "Number, Timing, and Duration of Marriages and Divorces in the United States."

Among the subjects covered in the second report is the number of times the husband and wife have been married in relation to their education and their family income. Changes since 1960 in various marital characteristics of persons 35 to 54 years old by educational level are analyzed. Special projections show differences between young adults in five educational levels with respect to the proportion of persons who may eventually end their first marriage in divorce. New types of data are presented on the relation between age at divorce after first marriage, number of children born before divorce, and number of years divorced before remarriage (and similar data on widowhood). Two of the detailed tables throw light on the relation between the age of the youngest child at the time of divorce and the age of the mother at divorce, the number of children the woman bore

before divorce, and whether the mother remarried by the survey date. Several tables present data on the living arrangements of children under 18 years of age by characteristics of their parents (whether both parents present and married only once, and if living with only one parent, the marital status of that parent).

Copies of the report, "Marriage, Divorce, Widowhood, and Remarriage by Family Characteristics: June 1975," *Current Population Reports,* Series P-20, No. 312 (39 pp., $1.05) are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, or any Department of Commerce district office. (PAUL C. GLICK, BUREAU OF THE CENSUS, DEPARTMENT OF COMMERCE, telephone (301) 763-7030.)

RECENT NSF REPORTS

The National Science Foundation has recently released four *Science Resources Studies Highlights* which are briefly described below:

"Aptitude Test Scores of Prospective Graduate Students in Science Remained Essentially the Same from 1970 to 1975" (NSF 77-318) summarizes an NSF-sponsored study addressing the issue of whether in recent years there has been a decline in the quality of candidates for graduate study.

"Defense and Energy Spur Federal R&D Growth From FY 1974 to FY 1978" (NSF 77-320) discusses data taken from the forthcoming report, *An Analysis of Federal R&D Funding by Function, Fiscal Years 1969-1978.* Fifteen functional categories were chosen to make visible the chief objective reflected by R&D programs in the 1978 budget.

"Federal R&D Funding Shows Strong Recent Rise But Little Real Growth in FY 1978" (NSF 77-323) contains data taken from *Federal Funds for Research, Development, and Other Scientific Activities, Fiscal Years 1976, 1977, and 1978,* Volume XXVI, to be published later. Data reflect estimates for 1977 and requested amounts for 1978 as shown in the President's budget to Congress. Federal R&D obligations are shown by agency, character of work, performer, and field of science.

"National Sample of Scientists and Engineers: Changes in Employment, 1972-74 and 1974-76" (NSF 77-322) reports on a sample of 50,000 scientists and engineers who represented the individuals working in science and engineering at the time of the 1970 Census of Population. This sample (the National Sample) was surveyed in 1974 and in 1976 with the intent of measuring changes in the 1970 science and engineering labor force. This report presents selected topics from the 1976 survey: utilization, unemployment, quality/education, primary work activity, type of employer, and field.

Copies of these four *Science Resources Studies Highlights* are available gratis upon request from the Division of Science Resources Studies, National Science Foundation, 1800 G Street, N.W., Washington, D.C. 20550.

Volumes of *Detailed Statistical Tables* have been published in advance of the final analytical report for:

Graduate Science Education: Student Support and Postdoctorals, Fall 1976 (NSF 77-319) and

Manpower Resources for Scientific Activities at Universities and Colleges, January 1977 (NSF 77-321).

Copies of these two volumes of *Detailed Statistical Tables* are available gratis upon request from the Division of Science Resources Studies, National Science Foundation, 1800 G Street, N.W. 20550. (CHARLES E. FALK, DIVISION OF SCIENCE RESOURCES STUDIES, NATIONAL SCIENCE FOUNDATION, telephone (202) 634-4622.)

NEW REPORTING PLANS AND FORMS

The following listing gives brief descriptions of a selected group of new reporting plans and forms approved between September 1 and October 3, 1977 by the Office of Management and Budget under the provisions of the Federal Reports Act. The description refers to surveys and data collection programs which are just being started or are soon to be started so results are not yet available.

This section on new reporting plans and forms will no longer appear in *Statistical Reporter*. Executive Order No. 12013, effective October 9, 1977, provided that the responsibility for the clearance of forms under the Federal Reports Act of 1942 remain with the Office of Management and Budget, while transferring certain statistical policy functions to the Department of Commerce. (See October issue for further details.) The list below completes the period prior to the transfer of functions.

Department of Agriculture

Farmer Cooperative Service

Survey of Coordinated Cooperative Trucking Activities (singletime).—The Farmer Cooperative Service estimates about 12,000 truckloads of cooperative processed fruits and vegetables move between California, Oregon, and Washington annually. Further study indicates a strong balance in the movements between each State. It appears that there is a good opportunity for providing backhauls and jointly coordinating these shipments to improve service, increase utilization of transportation equipment, and reduce both energy requirements and costs. FCS has therefore developed a study to determine how many of the 12,000 loads could actually contribute to a joint cooperative transportation program and the potential savings that might be available to cooperative members by combining deliveries and shipping in their own trucks. All known cooperative fruit and vegetable processors in the three Pacific Coast States who have some control over their shipments will comprise the sample. (For further information: ELDON BROOKS, FARMER COOPERATIVE SERVICE, DEPARTMENT OF AGRICULTURE, telephone (202) 447-8939.)

Forest Service

An Assessment of the Use and Potential of Private Lands for Outdoor Recreation (singletime).—This nationwide study is to assess current and potential uses of private rural lands which will lead to an up-to-date information system of the private sector and its resources. The major objectives are to:

1. Measure the existing nationwide recreation resource supply of the private sector by region, examine availabilities of forest and range lands for general public recreational use by region and assess existing and desired recreation supply relationships between the public and private sectors.
2. Conduct a nationwide survey of private land owners to determine sample size and respondent selection procedure needed for building data bases describing the private sector.

The immediate application of this research will be to develop private sector recreation supply data (as required by P.L. 93-378) for the 1980 Renewable Resources Assessment and the 1980 Nationwide Outdoor Recreation Plan. (For further information: H. K. CORDELL, FOREST SERVICE, DEPARTMENT OF AGRICULTURE, telephone (803) 656-3410.)

OTHER REPORTING PLANS AND FORMS

Shown below, by agency, is a list of new reports approved between September 1 to October 3, 1977 excluding those described above. Requests for copies of these reports should be addressed to the public reports clearance officer of the sponsoring agency. A list of agency clearance officers may be obtained by writing to Marsha Traynham, Statistical Policy Division, Office of Management and Budget, Washington, D.C. 20503.

During September approximately 151 forms reached their expiration dates and are no longer approved for use.

DEPARTMENT OF AGRICULTURE

- New York Agriculture District Survey
- Administrative Review Report—Child Care Food Program
- Minnesota Canoe and Kayak Owners Survey
- Point of Sales Survey (Pre-test)

DEPARTMENT OF COMMERCE

- Survey of Manufacturer's Alternative Energy Capabilities: 1977
- Annual Wholesale Trade: 1977 Value Added, Capital Expenditures, Fixed Assets
- 1977 Service Trade Report—Fixed Assets, Capital Expenditures, Rental Payments and Labor Cost
- Agriculture Stabilization and Conservation Service Test Verification
- 1977 Mail List Update (Test)
- General Revenue Sharing Survey—Indian Tribes
- Ethylene Oxide
- Evaluation of Industry Needs in Exporting
- Title IX Evaluation Interview Guides
- Environmental Data Service Programs Benefit—Cost Study Questionnaire

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

- Vocational Education Data System
- Common Core Data Survey for School Year 1977-78
- Financial Status and Performance Reports for Domestic Mining and Mineral Fuel Conservation Fellowships Program
- Initial Request for Advance Funds
- Blood Sample Identification Card
- World Health Organization Monitoring of Mental Health Needs
- 1978 Survey of Widows Without Benefits
- Survey of Disability and Work
- Group Practice Efficiency Study Questionnaires
- Interview Guides Developmental Assessment: Survey and Identification of Head State Practices and Needs
- Typology and Service Assessment of Runaway Youth Unable or Unwilling to Return Home
- Evaluation of the Process of Mainstreaming Handicapped Children into Head Start

DEPARTMENT OF HOUSING AND URBAN DEVELOMENT

- Inspection and Estimate, Adjuster's Report, Worksheet, Notice of Loss, Proof of Loss, Etc.
- Application for Flood Insurance, Renewal Application, Change Endorsement and Cancellations
- Application for Assistance Under Title IV of the Housing Act of 1950, as Amended

DEPARTMENT OF THE INTERIOR

- Recreation Use Survey: Arctic National Wildlife Range

DEPARTMENT OF JUSTICE

- 1977 Census of Public and Private Juvenile Detention, Correctional and Shelter Facilities
- National Crime Information Center Stolen Vehicle Locates (Form A); Prosecution of Dyer Act Referrals (Form B)
- National Institute of Law Enforcement and Criminal Justice Planning Survey

DEPARTMENT OF LABOR

- Impact of Training Survey
- Work Injury Report
- Young Adult Conservation Corps Application Form
- Certification of Continuing Entitlement to Benefits
- Prehearing Statement
- The 1977 Quality of Employment Survey
- Separation Questionnaire for Professional Women

DEPARTMENT OF THE TREASURY

- Survey of Federal General Revenue Sharing and Antirecession Fiscal Assistance Expenditures
- Office of Industrial Economics—Survey of Three Industries: Professional, Scientific and Controlling Instruments

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

- Questionnaire to Small Utilities

ENVIRONMENTAL PROTECTION AGENCY

- Economic Impact Analysis Questionnaire: June 23, 1976 Oil Spill—St. Lawrence River
- Acute Respiratory Disease Questionnaire

COMMUNITY SERVICES ADMINISTRATION

- Application for Recognition of a CAA—Notice to Political Subdivision
- Application for Recognition of a CAA—Local Civil Service Certification

SMALL BUSINESS ADMINISTRATION

- Women Pre-Business Workshop Evaluation: Women in Business Seminar Evaluation

TENNESSEE VALLEY AUTHORITY

- Downtown Improvements Survey, Operation Townlift
- Wood Heating Demonstration Experience Record

U.S. INTERNATIONAL TRADE COMMISSION

Importers' Questionnaire (CB Radio Transceivers)

VETERANS ADMINISTRATION

Statement of Termination of Marital Relationship

U.S. CIVIL SERVICE COMMISSION

Application Form—Presidential Management Intern Program
Allotments Questionnaire

PERSONNEL NOTES

FEDERAL RESERVE BOARD

Division of Research and Statistics: GEORGE AKERLOF, Associate Professor at the University of California at Berkeley, has joined the staff of the Special Studies Section as a Visiting Professor for one year. CYNTHIA GLASSMAN, formerly an economist at the Federal Reserve Bank of Philadelphia, has joined the Board's staff as an economist in the Financial Structure Section. FREDERICK YOHN has joined the Board's staff as an economist in the Capital Markets Section. PAUL SPINDT has joined the Board's staff as an economist in the Special Studies Section. JOHN J. MINGO, formerly an Associate Research Division Officer, has been promoted to Senior Research Division Officer.

NATIONAL SCIENCE FOUNDATION

ROBERT J. SERFLING, Professor of Statistics at Florida State University, Tallahassee, has joined the Division of Science Resources Studies for one year to serve as Statistical Advisor.

SCHEDULE OF RELEASE DATES FOR PRINCIPAL FEDERAL ECONOMIC INDICATORS

December 1977

Release dates scheduled by agencies responsible for the principal economic indicators of the Federal Government are given below. *These are target dates* that will be met in the majority of cases. *Occasionally agencies may be able to release data a day or so earlier or may be forced by unavoidable compilation problems to release a report one or more days later.*

A similar schedule will be shown here each month covering release dates for the following month. The indicators are identified by the title of the releases in which they are included; the source agency; the release identification number where applicable; and the *Business Conditions Digest* series numbers for all BCD series included, shown in parentheses. Release date information for additional series can be found in publications of the sponsoring agencies.

(Any inquiries about these series should be directed to the issuing agency.)

Date	*Subject*	*Data for*
December 1	Manufacturers' Shipments, Inventories, and Orders, Census, M3-1 (65)	October
1	Construction Expenditures (Press release), Census, C-30 (69)	October
1	Money Stock Measures, Federal Reserve Board (FRB), H.6 (85, 102, 107, 108)	Week Ending November 23
1	Factors Affecting Bank Reserves and Condition Statement of Federal Reserve Banks, FRB, H.4.1 (93, 94)	Week Ending November 30
2	The Employment Situation (Press release), Bureau of Labor Statistics (BLS) (1, 21, 37, 40-44, 91, 340, 442, 444-448, 451-453)	November
5	Manufacturers' Export Sales and Orders, Census, M4-A	October
6	Open Market Money Rates and Bond Prices, FRB, G.13	November
7	Plant and Equipment Expenditures, Bureau of Economic Analysis (BEA) (61)	3Q '77 and 1977
7	Consumer Credit, FRB, G.19 (66, 113)	October
7	Condition Report of Large Commercial Banks, FRB, H.4.2 (72, 112)	Week Ending November 30

Date	Subject	Data for
December 8	Money Stock Measures, FRB, H.6 (85, 102, 107, 108)	Week Ending November 30
8	Factors Affecting Bank Reserves and Condition Statement of Federal Reserve Banks, FRB, H.4.1 (93, 94)	Week Ending December 7
8	Wholesale Price Index (Press release), BLS (330-334)	November
9	Monthly Wholesale Trade (Press release), Census, BW	October
9	Quarterly Financial Report for Manufacturing Corporations, Federal Trade Commission	3 Q '77
12	Advance Monthly Retail Sales (Press release), Census (54)	November
14	Condition Report of Large Commercial Banks, FRB, H.4.2 (72, 112)	Week Ending December 7
15	Money Stock Measures, FRB, H.6 (85, 102, 107, 108)	Week Ending December 7
15	Factors Affecting Bank Reserves and Condition Statement of Federal Reserve Banks, FRB, H.4.1 (93, 94)	Week Ending December 14
15	Industrial Production and Related Data, FRB, G.12.3 (47, 73–76)	November
15	Food Assistance Programs Results, Agriculture	October
15	Manufacturing and Trade: Inventories and Sales, BEA, (31, 56, 71)	October
15	Yields on FHA Insured New Home 30-Year Mortgages, HUD (118)	December 1
16	Bank Rates on Short-Term Business Loans, FRB, E.2 (67)	November 1–15
16	Personal Income, BEA (223)	November
16	Housing Starts (Press release), Census, C-20 (28, 29)	November
19	Revised Corporate Profits and National Income, BEA	3 Q '77
19	Output, Capacity, and Capacity Utilization, FRB, G.3 (82, 84)	November
21	Advance Report on Durable Goods, Manufacturers Shipments and Orders (Press release), Census M3-1 (6, 24, 25, 96, 548)	November
21	Summary of U.S. International Transactions (BEA)	3 Q '77

Date	Subject	Data for
December 21	Consumer Price Index (Press Release), BLS (320–332)	November
21	Real Earnings (Press release), BLS (341)	November
21	Condition Report of Large Commercial Banks, FRB, H.4.2 (72, 112)	Week Ending December 14
22	Money Stock Measures, FRB, H.6 (85, 102, 107, 108)	Week Ending December 14
22	Factors Affecting Bank Reserves and Condition Statement of Federal Reserve Banks, FRB, H.4.1 (93, 94)	Week Ending December 21
23	Average Yields of Long-Term Bonds, Treasury Bulletin (115, 116)	October
27	Export and Import Merchandise Trade, Census, FT-900 (602, 612)	November
28	Work Stoppages (Press release), BLS	November
28	Condition Report of Large Commercial Banks, FRB, H.4.2 (72, 112)	Week Ending December 21
29	Money Stock Measures, FRB, H.6 (85, 102, 107, 108)	Week Ending December 21
29	Factors Affecting Bank Reserves and Condition Statement of Federal Reserve Banks, FRB, H.4.1 (93, 94)	Week Ending December 28
30	Agricultural Prices, Agriculture	Mid-December
30	Composite Indexes of Leading, Coincident, and Lagging Indicators (Press release), BEA	October–November
30	Labor Turnover in Manufacturing (Press release), BLS (2, 3, 4)	November
30	Defense Indicators, BEA (525)	November

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